Maths Easter Revision Pack - Foundation

How to make the most out of your Easter Revsion

We have given you a sample of typical topics and questions where pupils normally loose marks. For each topic we have chosen we have included a Knowledge Organiser with facts and rules for each.

1. Formulae sheet: These are all the rules for your geometry and compound measures that you need to know by heart.
2. Flash card: Samples to show you how to make your own flash cards.
3. Knowledge organiser: Fact sheets for the 10 topics chosen
4. ***Exam style questions based on 10 most common mistakes questions from GCSE 2018 and November Mock paper:***
   - *Factors and Multiples*
   - *Compound Measures*
   - *Standard form*
   - *Algebra*
   - *Equations and Formulae*
   - *Basic Probability*
   - *Circumference and Area*
   - *Perimeter and Area*
   - *Angles*
   - *Stem and Leaf Diagram*
   - *Answer*
5. Mixed Practise questions and answers for your Memory Platform Revision
6. Revision Mat: Sample of how to do work with peers. You'll find more of these on the P:Drive

Easter revision advice

There will be plenty of other materials on the P:drive and we will also send out extra material via the email. Happy Easter and Happy Revising

Check your email for past papers, revision list, and Hegarty Exam topic list.

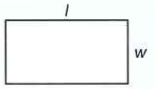
edexcel

Edexcel GCSE (9-1) Maths: need-to-know formulae

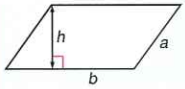
www.edexcel.com/gcsemathsformulae

Areas

Rectangle = $l \times w$

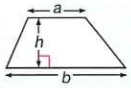


Parallelogram = $b \times h$



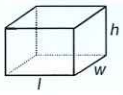
Triangle = $\frac{1}{2} b \times h$

Trapezium = $\frac{1}{2}(a + b)h$

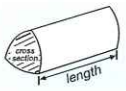


Volumes

Cuboid = $l \times w \times h$



Prism = area of cross section × length



Cylinder = $\pi r^2 h$

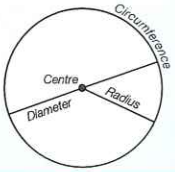
Volume of pyramid = $\frac{1}{3}$ × area of base × h

Circles

Circumference = π × diameter, $C = \pi d$

Circumference = $2 \times \pi \times$ radius, $C = 2\pi r$

Area of a circle = π × radius squared, $A = \pi r^2$



Compound measures

Speed

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

Density

$$\text{density} = \frac{\text{mass}}{\text{volume}}$$

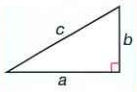
Pressure

The formula for pressure does not need to be learnt, and will be given within the relevant examination questions.

Pythagoras

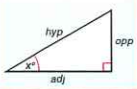
Pythagoras' Theorem

For a right-angled triangle, $a^2 + b^2 = c^2$



Trigonometric ratios (*new to F*)

$\sin x^\circ = \frac{\text{opp}}{\text{hyp}}$, $\cos x^\circ = \frac{\text{adj}}{\text{hyp}}$, $\tan x^\circ = \frac{\text{opp}}{\text{adj}}$

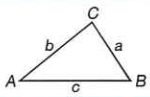


Trigonometric formulae

Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle $= \frac{1}{2} ab \sin C$



Quadratic equations

The Quadratic Equation

The solutions of $ax^2 + bx + c = 0$,

where $a \neq 0$, are given by $x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$

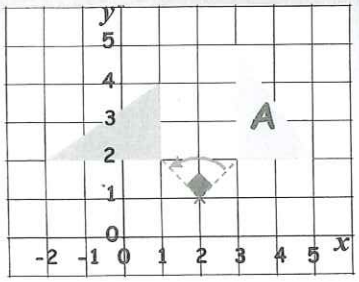
Foundation tier formulae

Higher tier formulae

Pearson

43 Rotations

Rotations are described by ❶ a direction, ❷ an angle and ❸ a centre of rotation.



Triangle A is rotated

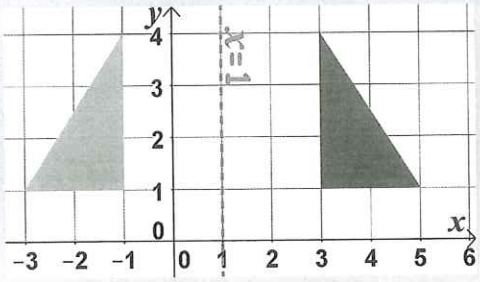
❶ anticlockwise

❷ through 90°

❸ with centre of rotation (2,1).

44 Reflections

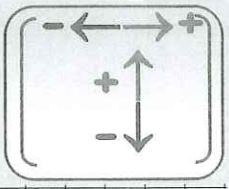
Reflections are described by a mirror line.



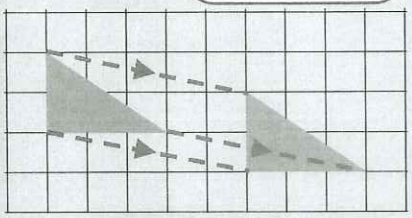
Reflection in the line $x = 1$

45 Translations

A translation moves an object without turning it or changing its size. Vector notation is used to describe translations.



$\begin{pmatrix}5\\-1\end{pmatrix}$ means move 5 to the right and 1 down

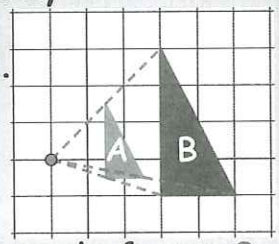


46 Enlargements

Enlargements are described by

❶ a centre of enlargement.

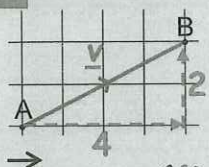
❷ a scale factor.

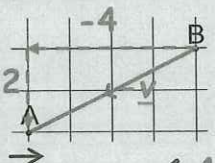


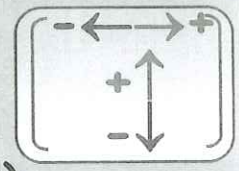
A → B enlargement centre • scale factor 2

B → A enlargement centre • scale factor $\frac{1}{2}$

61 Vector Notation 1





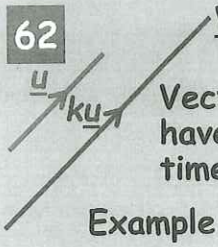


$\overrightarrow{AB} = \underline{v} = \begin{pmatrix}4\\2\end{pmatrix}$ $\overrightarrow{BA} = -\underline{v} = \begin{pmatrix}-4\\-2\end{pmatrix}$

Equal vectors are parallel and have the same magnitude (length) and direction.

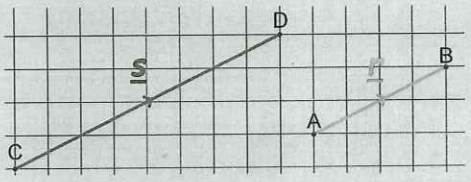
Vectors $\underline{v}$ and $-\underline{v}$ are parallel and have the same magnitude but opposite directions.

62 Vector Notation 2



Vectors $\underline{u}$ and $k\underline{u}$ are parallel and have the same direction. $k\underline{u}$ is k times the magnitude (length) of $\underline{u}$.

Example

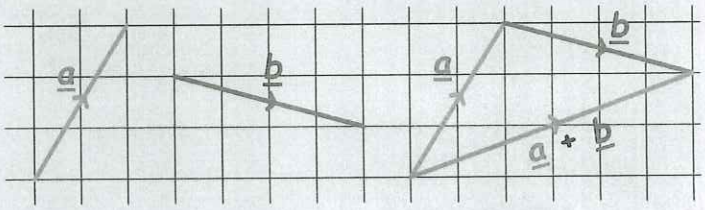


$\underline{s} = 2\underline{r}$

$\overrightarrow{AB} = \underline{r} = \begin{pmatrix}4\\2\end{pmatrix}$

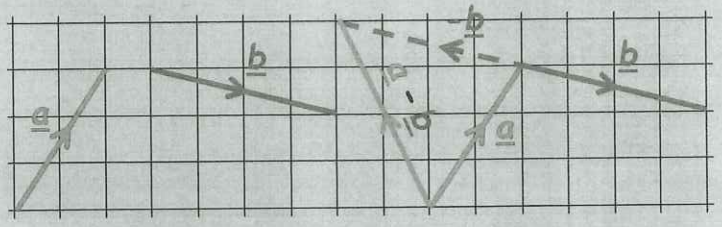
$\overrightarrow{CD} = \underline{s} = \begin{pmatrix}8\\4\end{pmatrix}$

63 Adding Vectors



$\underline{a} = \begin{pmatrix}2\\3\end{pmatrix}$ $\underline{b} = \begin{pmatrix}4\\-1\end{pmatrix}$ $\underline{a} + \underline{b} = \begin{pmatrix}2\\3\end{pmatrix} + \begin{pmatrix}4\\-1\end{pmatrix} = \begin{pmatrix}6\\2\end{pmatrix}$

64 Subtracting Vectors



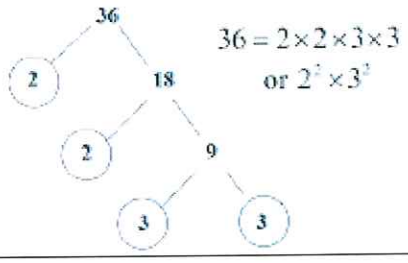
$\underline{a} = \begin{pmatrix}2\\3\end{pmatrix}$ $\underline{b} = \begin{pmatrix}4\\-1\end{pmatrix}$ $\underline{a} - \underline{b} = \begin{pmatrix}2\\3\end{pmatrix} - \begin{pmatrix}4\\-1\end{pmatrix} = \begin{pmatrix}-2\\4\end{pmatrix}$

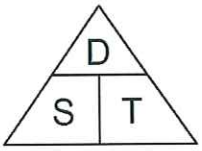
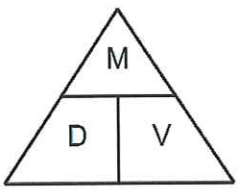
Note: Mr Ous has emailed you all of these flashcards. See email titled 'Flashcards' from Mr Ous.

Knowledge organiser:

Fact for the 10 topics chosen

- Factors and Multiples
- Compound Measures
- Standard form
- Algebra
- Equations and Formulae
- Basic Probability
- Circumference and Area
- Perimeter and Area
- Angles
- Stem and Leaf Diagram

Topic/Skill	Definition/Tips	Example
1. Multiple	The result of multiplying a number by an integer. The **times tables** of a number.	The first five multiples of 7 are: $7, 14, 21, 28, 35$
2. Factor	A number that **divides exactly** into another number without a remainder. It is useful to write factors in pairs	The factors of 18 are: $1, 2, 3, 6, 9, 18$ The factor pairs of 18 are: $1, 18$ $2, 9$ $3, 6$
3. Lowest Common Multiple (LCM)	The **smallest** number that is in the **times tables** of each of the numbers given.	The LCM of 3, 4 and 5 is 60 because it is the smallest number in the 3, 4 and 5 times tables.
4. Highest Common Factor (HCF)	The **biggest** number that **divides exactly** into two or more numbers.	The HCF of 6 and 9 is 3 because it is the biggest number that divides into 6 and 9 exactly.
5. Prime Number	A number with **exactly two factors**. A number that can only be divided by itself and one. The number **1 is not prime**, as it only has one factor, not two.	The first ten prime numbers are: $2, 3, 5, 7, 11, 13, 17, 19, 23, 29$
6. Prime Factor	A factor which is a prime number.	The prime factors of 18 are: $2, 3$
7. Product of Prime Factors	Finding out which **prime numbers multiply** together to make the **original** number. Use a **prime factor tree.** Also known as 'prime factorisation'.	 $36 = 2 \times 2 \times 3 \times 3$ or $2^2 \times 3^2$

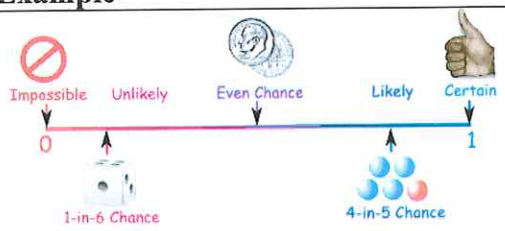
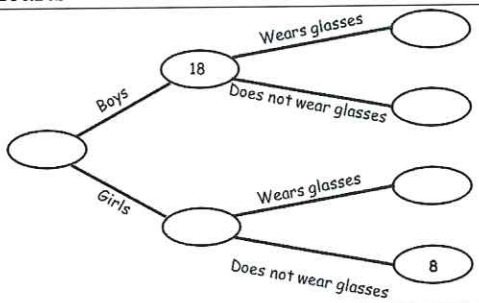
Topic/Skill	Definition/Tips	Example
1. Metric System	A system of measures based on: - the metre for length - the kilogram for mass - the second for time **Length: mm, cm, m, km** **Mass: mg, g, kg** **Volume: ml, cl, l**	$1 kilometres = 1000\ metres$ $1\ metre = 100\ centimetres$ $1\ centimetre = 10\ millimetres$ $1\ kilogram = 1000\ grams$
2. Imperial System	A system of weights and measures originally developed in England, usually based on human quantities **Length: inch, foot, yard, miles** **Mass: lb, ounce, stone** **Volume: pint, gallon**	$1lb = 16\ ounces$ $1\ foot = 12\ inches$ $1\ gallon = 8\ pints$
3. Metric and Imperial Units	Use the **unitary method** to convert between metric and imperial units.	$5\ miles \approx 8\ kilometres$ $1\ gallon \approx 4.5\ litres$ $2.2\ pounds \approx 1\ kilogram$ $1\ inch = 2.5\ centimetres$
4. Speed, Distance, Time	**Speed = Distance ÷ Time** **Distance = Speed x Time** **Time = Distance ÷ Speed**  Remember the correct units.	Speed = 4mph Time = 2 hours Find the Distance. $D = S \times T = 4 \times 2 = 8\ miles$
5. Density, Mass, Volume	**Density = Mass ÷ Volume** **Mass = Density x Volume** **Volume = Mass ÷ Density**  Remember the correct units.	Density = 8kg/m³ Mass = 2000g Find the Volume. $V = M \div D = 2 \div 8 = 0.25m^3$
6. Pressure, Force, Area	**Pressure = Force ÷ Area** **Force = Pressure x Area** **Area = Force ÷ Pressure**	Pressure = 10 Pascals Area = 6cm² Find the Force

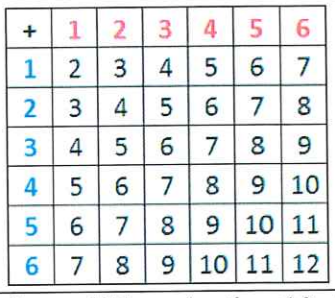
Topic/Skill	Definition/Tips	Example
1. Standard Form	$A \times 10^b$ *where* $1 \leq A < 10$, $b = integer$	$8400 = 8.4 \times 10^3$ $0.00036 = 3.6 \times 10^{-4}$
2. Multiplying or Dividing with Standard Form	Multiply: **Multiply the numbers** and **add the powers**. Divide: **Divide the numbers** and **subtract the powers**.	$(1.2 \times 10^3) \times (4 \times 10^6) = 8.8 \times 10^9$ $(4.5 \times 10^5) \div (3 \times 10^2) = 1.5 \times 10^3$
3. Adding or Subtracting with Standard Form	**Convert** in to **ordinary** numbers, **calculate** and then **convert back** in to standard form	$2.7 \times 10^4 + 4.6 \times 10^3$ $= 27000 + 4600 = 31600$ $= 3.16 \times 10^4$

Topic:
Algebra

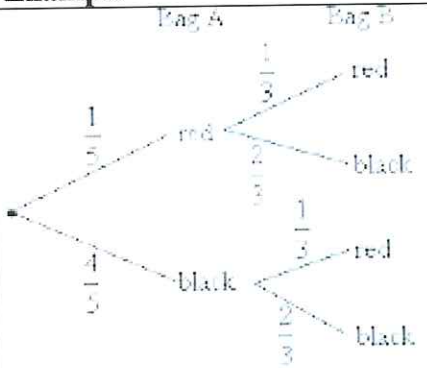
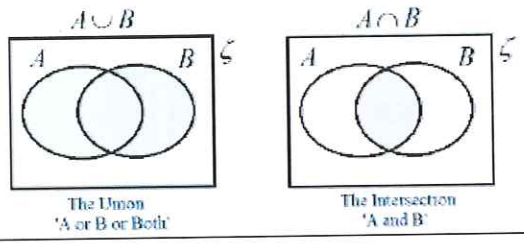
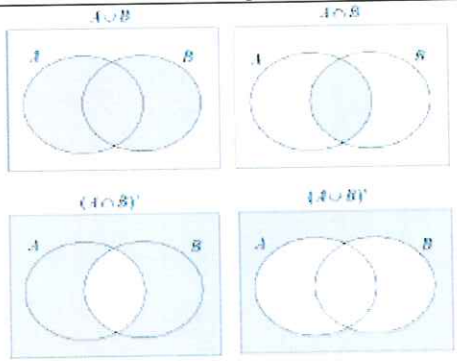
Topic/Skill	Definition/Tips	Example
1. Expression	A mathematical statement written using **symbols**, **numbers** or **letters**,	$3x + 2$ or $5y^2$
2. Equation	A statement showing that **two expressions are equal**	$2y - 17 = 15$
3. Identity	An equation that is **true for all values** of the variables An identity uses the symbol: $\equiv$	$2x \equiv x+x$
4. Formula	Shows the **relationship** between **two or more variables**	Area of a rectangle = length x width or A= LxW
5. Simplifying Expressions	**Collect 'like terms'.** Be careful with negatives. x^2 and x are not like terms.	$2x + 3y + 4x - 5y + 3$ $= 6x - 2y + 3$ $3x + 4 - x^2 + 2x - 1 = 5x - x^2 + 3$
6. x times x	The answer is x^2 not $2x$.	Squaring is multiplying by itself, not by 2.
7. $p \times p \times p$	The answer is p^3 not $3p$	If p=2, then p^3=2x2x2=8, not 2x3=6
8. $p + p + p$	The answer is 3p not p^3	If p=2, then 2+2+2=6, not $2^3 = 8$
9. Expand	To expand a bracket, **multiply** each term **in the bracket** by the expression **outside** the bracket.	$3(m + 7) = 3x + 21$
10. Factorise	The **reverse** of **expanding**. Factorising is writing an expression as a product of terms by '**taking out' a common factor**.	$6x - 15 = 3(2x - 5)$, where 3 is the common factor.

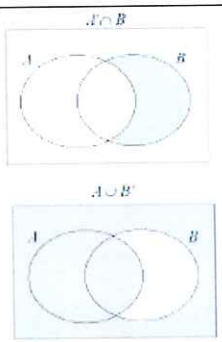
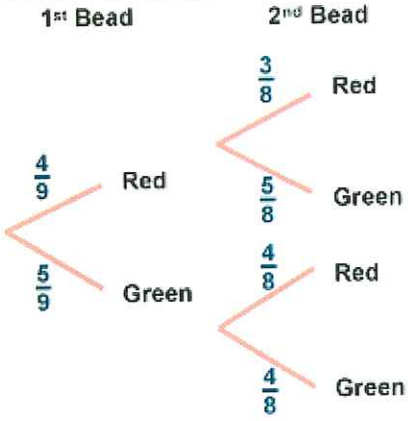
Topic/Skill	Definition/Tips	Example
1. Solve	To find the **answer**/value of something **Use inverse operations** on both sides of the equation (balancing method) until you find the value for the letter.	Solve $2x - 3 = 7$ Add 3 on both sides $2x = 10$ Divide by 2 on both sides $x = 5$
2. Inverse	**Opposite**	The inverse of addition is subtraction. The inverse of multiplication is division.
3. Rearranging Formulae	**Use inverse operations** on both sides of the formula (balancing method) until you find the expression for the letter.	Make x the subject of $y = \frac{2x-1}{z}$ Multiply both sides by z $yz = 2x - 1$ Add 1 to both sides $yz + 1 = 2x$ Divide by 2 on both sides $\frac{yz+1}{2} = x$ We now have x as the subject.
4. Writing Formulae	**Substitute letters for words** in the question.	Bob charges £3 per window and a £5 call out charge. $C = 3N + 5$ Where N=number of windows and C=cost
5. Substitution	**Replace letters with numbers**. Be careful of $5x^2$. You need to square first, then multiply by 5.	$a = 3, b = 2$ *and* $c = 5$. Find: 1. $2a = 2 \times 3 = 6$ 2. $3a - 2b = 3 \times 3 - 2 \times 2 = 5$ 3. $7b^2 - 5 = 7 \times 2^2 - 5 = 23$

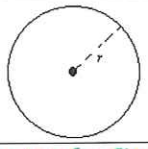
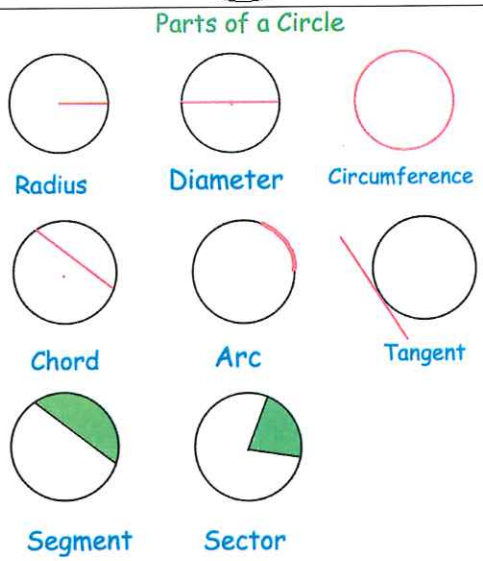
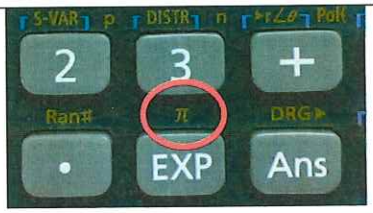
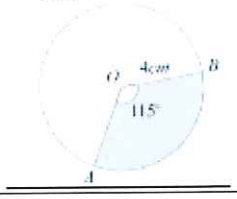
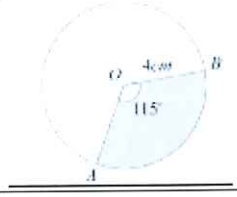
Topic/Skill	Definition/Tips	Example
1. Probability	The **likelihood/chance** of something happening. Is expressed as a number **between 0 (impossible) and 1 (certain)**. Can be expressed as a fraction, decimal, percentage or in words (likely, unlikely, even chance etc.)	
2. Probability Notation	**P(A)** refers to the **probability that event A will occur**.	P(Red Queen) refers to the probability of picking a Red Queen from a pack of cards.
3. Theoretical Probability	$\frac{\textit{Number of Favourable Outcomes}}{\textit{Total Number of Possible Outcomes}}$	Probability of rolling a 4 on a fair 6-sided die $= \frac{1}{6}$.
4. Relative Frequency	$\frac{\textit{Number of Successful Trials}}{\textit{Total Number of Trials}}$	A coin is flipped 50 times and lands on Tails 29 times. The relative frequency of getting Tails $= \frac{29}{50}$.
5. Expected Outcomes	To find the number of expected outcomes, **multiply** the **probability** by the **number of trials**.	The probability that a football team wins is 0.2 How many games would you expect them to win out of 40? $0.2 \times 40 = 8\ games$
6. Exhaustive	Outcomes are **exhaustive** if they **cover the entire range of possible outcomes**. The **probabilities** of an **exhaustive** set of outcomes **adds up to 1**.	When rolling a six-sided die, the outcomes 1, 2, 3, 4, 5 and 6 are exhaustive, because they cover all the possible outcomes.
7. Mutually Exclusive	Events are mutually exclusive if they **cannot happen at the same time**. The **probabilities** of an exhaustive set of **mutually exclusive** events **adds up to 1**.	Examples of mutually exclusive events: - Turning left and right - Heads and Tails on a coin Examples of non mutually exclusive events: - King and Hearts from a deck of cards, because you can pick the King of Hearts
8. Frequency Tree	A diagram showing how information is categorised into various categories. The **numbers** at the ends of branches tells us how often something happened (**frequency**). The **lines** connected the numbers are called	

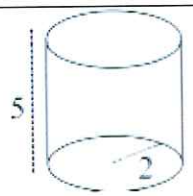
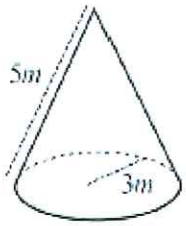
	branches.	
9. Sample Space	The **set of all possible outcomes** of an experiment.	
10. Sample	A **sample** is a small selection of items from a population. A sample is **biased** if individuals or groups from the population are not represented in the sample.	A sample could be selecting 10 students from a year group at school.
11. Sample Size	The larger a sample size, the closer those probabilities will be to the true probability.	A sample size of 100 gives a more reliable result than a sample size of 10.

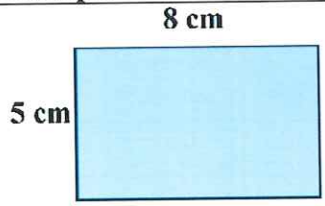
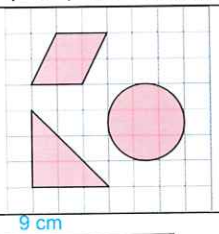
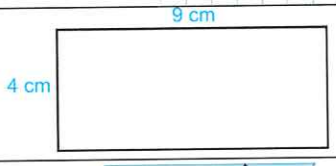
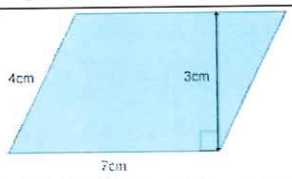
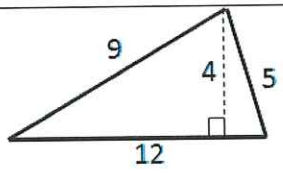
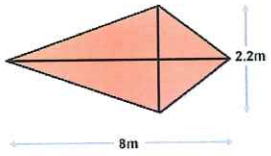
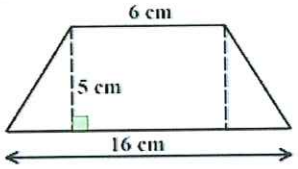
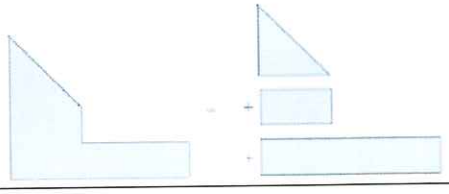
+	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

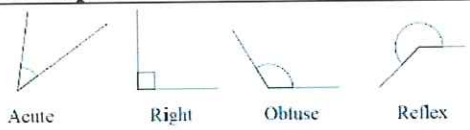
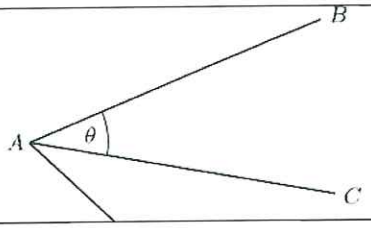
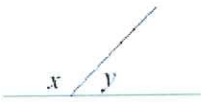
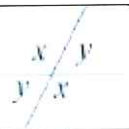
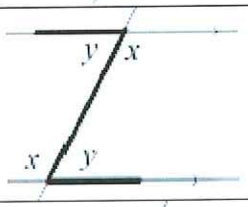
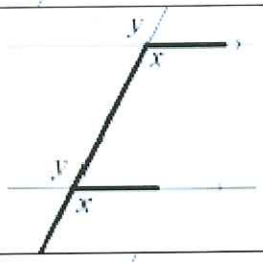
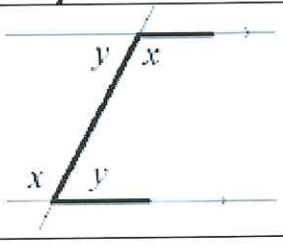
Topic/Skill	Definition/Tips	Example
1. Tree Diagrams	Tree diagrams show **all the possible outcomes** of an event and calculate their probabilities. **All branches must add up to 1 when adding downwards.** This is because the **probability of something not happening** is **1 minus the probability that it does happen**. **Multiply** going **across** a tree diagram. **Add** going **down** a tree diagram.	
2. Independent Events	The outcome of a **previous event does not influence/affect the outcome of a second event**.	An example of independent events could be replacing a counter in a bag after picking it.
3. Dependent Events	The outcome of a **previous event does influence/affect the outcome of a second event**.	An example of dependent events could be not replacing a counter in a bag after picking it. 'Without replacement'
4. Probability Notation	**P(A)** refers to the **probability that event A will occur**. **P(A')** refers to the **probability that event A will not occur**. **P(A ∪ B)** refers to the **probability that event A or B or both will occur.** **P(A ∩ B)** refers to the **probability that both events A and B will occur.**	P(Red Queen) refers to the probability of picking a Red Queen from a pack of cards. P(Blue') refers to the probability that you do not pick Blue. P(Blonde ∪ Right Handed) refers to the probability that you pick someone who is Blonde or Right Handed or both. P(Blonde ∩ Right Handed) refers to the probability that you pick someone who is both Blonde and Right Handed.
5. Venn Diagrams	A Venn Diagram shows the **relationship between a group of different things** and how they overlap. You may be asked to shade Venn Diagrams as shown below and to the right.  The Union 'A or B or Both' The Intersection 'A and B'	

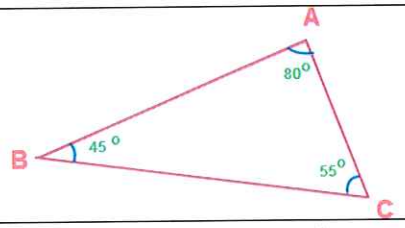
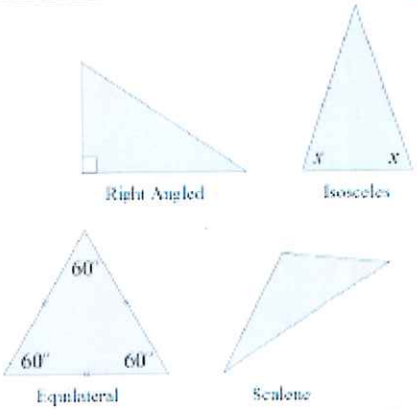
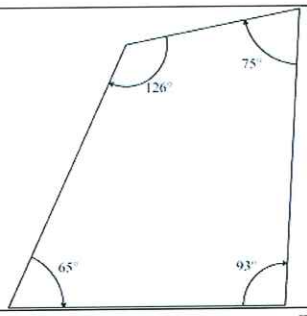
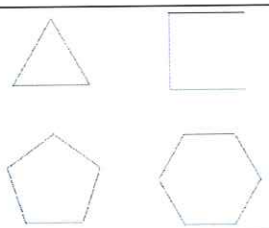
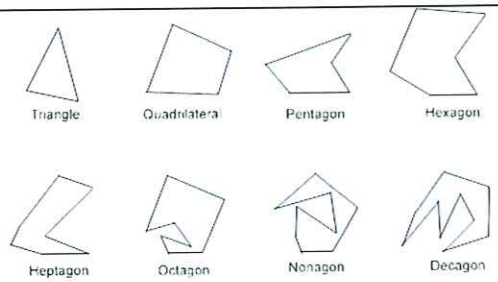
		
6. Venn Diagram Notation	∈ means '**element of a set**' (a value in the set) { } means the collection of values in the set. ξ means the '**universal set**' (all the values to consider in the question) **A' means 'not in set A' (called complement)** **A ∪ B means 'A or B or both' (called Union)** **A ∩ B means 'A and B (called Intersection)**	Set A is the even numbers less than 10. A = {2, 4, 6, 8} Set B is the prime numbers less than 10. B = {2, 3, 5, 7} A ∪ B = {2, 3, 4, 5, 6, 7, 8} A ∩ B = {2}
7. AND rule for Probability	When two events, A and B, are **independent**: $\boldsymbol{P(A\ and\ B) = P(A) \times P(B)}$	What is the probability of rolling a 4 and flipping a Tails? $P(4\ and\ Tails) = P(4) \times P(Tails)$ $= \frac{1}{6} \times \frac{1}{2} = \frac{1}{12}$
8. OR rule for Probability	When two events, A and B, are **mutually exclusive**: $\boldsymbol{P(A\ or\ B) = P(A) + P(B)}$	What is the probability of rolling a 2 or rolling a 5? $P(2\ or\ 5) = P(2) + P(5)$ $= \frac{1}{6} + \frac{1}{6} = \frac{2}{6} = \frac{1}{3}$
9. Conditional Probability	The probability of an event A happening, **given that** event B has already happened. With conditional probability, check if the numbers on the second branches of a tree diagram changes. For example, if you have 4 red beads in a bag of 9 beads and pick a red bead on the first pick, then there will be 3 red beads left out of 8 beads on the second pick.	

Topic/Skill	Definition/Tips	Example
1. Circle	A circle is the locus of all points equidistant from a central point.	
2. Parts of a Circle	**Radius** – the **distance** from the **centre** of a circle to the **edge** **Diameter** – the total **distance** across the **width** of a circle **through the centre**. **Circumference** – the **total distance** around the **outside** of a circle **Chord** – a **straight line** whose **end points lie on a circle** **Tangent** – a **straight line** which **touches** a circle at exactly **one point** **Arc** – a **part of the circumference** of a circle **Sector** – the **region** of a circle enclosed by **two radii** and their intercepted **arc** **Segment** – the **region** bounded by a **chord** and the **arc** created by the chord	
3. Area of a Circle	$A = \pi r^2$ which means 'pi x radius squared'.	If the radius was 5cm, then: $A = \pi \times 5^2 = 78.5cm^2$
4. Circumference of a Circle	$C = \pi d$ which means 'pi x diameter'	If the radius was 5cm, then: $C = \pi \times 10 = 31.4cm$
5. π ('pi')	Pi is the circumference of a circle divided by the diameter. $\pi \approx 3.14$	
6. Arc Length of a Sector	The arc length is part of the circumference. Take the **angle** given **as a fraction over 360°** and **multiply** by the **circumference**.	Arc Length $= \frac{115}{360} \times \pi \times 8 = 8.03cm$ 
7. Area of a Sector	The area of a sector is part of the total area. Take the **angle** given **as a fraction over 360°** and **multiply** by the **area**.	Area $= \frac{115}{360} \times \pi \times 4^2 = 16.1cm^2$ 

8. Surface Area of a Cylinder	**Curved Surface Area = πdh** or **$2\pi rh$** **Total SA = $2\pi r^2 + \pi dh$** or **$2\pi r^2 + 2\pi rh$**	 $Total\ SA = 2\pi(2)^2 + \pi(4)(5) = 28\pi$
9. Surface Area of a Cone	**Curved Surface Area = πrl** where $l = slant\ height$ **Total SA = $\pi rl + \pi r^2$** You may need to use Pythagoras' Theorem to find the slant height	 $Total\ SA = \pi(3)(5) + \pi(3)^2 = 24\pi$
10. Surface Area of a Sphere	**$SA = 4\pi r^2$** Look out for hemispheres – halve the SA of a sphere and add on a circle (πr^2)	Find the surface area of a sphere with radius 3cm. $SA = 4\pi(3)^2 = 36\pi cm^2$

Topic/Skill	Definition/Tips	Example
1. Perimeter	The **total distance** around the **outside** of a shape. Units include: mm, cm, m etc.	 $P = 8 + 5 + 8 + 5 = 26cm$
2. Area	The amount of **space inside** a shape. Units include: mm^2, cm^2, m^2	
3. Area of a Rectangle	**Length x Width**	 $A = 36cm^2$
4. Area of a Parallelogram	**Base x Perpendicular Height** Not the slant height.	 $A = 21cm^2$
5. Area of a Triangle	**Base x Height ÷ 2**	 $A = 24cm^2$
6. Area of a Kite	Split in to **two triangles** and use the method above.	 $A = 8.8m^2$
7. Area of a Trapezium	$\frac{(a+b)}{2} \times h$ "Half the sum of the parallel side, times the height between them. That is how you calculate the area of a trapezium"	 $A = 55cm^2$
8. Compound Shape	A shape made up of a **combination of other known shapes** put together.	

Topic/Skill	Definition/Tips	Example
1. Types of Angles	**Acute angles** are less than 90°. **Right angles** are exactly 90°. **Obtuse angles** are greater than 90° but less than 180°. **Reflex angles** are greater than 180° but less than 360°.	
2. Angle Notation	Can use **one lower-case** letters, eg. θ or x Can use **three upper-case** letters, eg. BAC	
3. Angles at a Point	**Angles around a point add up to 360°.**	 $a+b+c+d=360°$
4. Angles on a Straight Line	**Angles around a point on a straight line add up to 180°.**	 $x+y=180°$
5. Opposite Angles	**Vertically opposite angles are equal.**	
6. Alternate Angles	**Alternate angles are equal.** They look like Z angles, but never say this in the exam.	
7. Corresponding Angles	**Corresponding angles are equal.** They look like F angles, but never say this in the exam.	
8. Co-Interior Angles	**Co-Interior angles add up to 180°.** They look like C angles, but never say this in the exam.	

9. Angles in a Triangle	**Angles in a triangle add up to 180°.**	
10. Types of Triangles	**Right Angle** Triangles have a **90°** angle in. **Isosceles** Triangles have **2 equal sides** and **2 equal base angles**. **Equilateral** Triangles have **3 equal sides** and **3 equal angles (60°)**. **Scalene** Triangles have **different sides** and **different angles**. **Base angles in an isosceles triangle are equal.**	
11. Angles in a Quadrilateral	**Angles in a quadrilateral add up to 360°.**	
12. Polygon	A **2D** shape with **only straight edges**.	Rectangle, Hexagon, Decagon, Kite etc.
13. Regular	A shape is regular if all the **sides** and all the **angles** are **equal**.	
14. Names of Polygons	**3**-sided = **Triangle** **4**-sided = **Quadrilateral** **5**-sided = **Pentagon** **6**-sided = **Hexagon** **7**-sided = **Heptagon**/Septagon **8**-sided = **Octagon** **9**-sided = **Nonagon** **10**-sided = **Decagon**	
15. Sum of Interior Angles	$(n-2)\times 180$ where n is the number of sides.	Sum of Interior Angles in a Decagon = $(10-2)\times 180 = 1440°$
16. Size of Interior Angle in a Regular Polygon	$\frac{(n-2)\times 180}{n}$ You can also use the formula:	Size of Interior Angle in a Regular Pentagon = $\frac{(5-2)\times 180}{5} = 108°$

Exam style questions based on 10 most common mistakes questions from GCSE 2018 and November Mock paper:

- Factors and Multiples
- Compound Measures
- Standard form
- Algebra
- Equations and Formulae
- Basic Probability
- Circumference and Area
- Perimeter and Area
- Angles
- Stem and Leaf Diagram

Foundation Easter Revision

Question 1

[Edexcel IGCSE(9-1) SAM 1F Q1b]

Here is a list of numbers.

2 8 15 24 31 36 40 64

From this list, write down a multiple of 6.

.....

Question 2

[Edexcel IGCSE May2015-2F Q1c]

Write down all the factors of 28.

.....

Question 3

[Edexcel IGCSE Jan2015(R)-4H Q8b Edited]

Write down 3 different factors of 224 with a sum between 99 and 110.

Input note: write them in ascending order, separated with commas i.e. 4, 5, 6

.....

Question 4

[Edexcel IGCSE Jan2016-2F Q1aiii]

6 1 25 52 90

From the numbers in the box, write down the multiple of 13.

.....

Question 5

[Edexcel IGCSE(9-1) SAM 1F Q14a]

Expand

$$5(2g + 7)$$

.....

Question 6

[Edexcel IGCSE May2015(R)-4H Q9a]

Expand

$$5(2p - 3)$$

.....

Question 7

[Edexcel IGCSE May2016(R)-4H Q2b]

Expand and simplify

$$3(2y + 2) + 2(y - 4)$$

.....

Question 8

[Edexcel IGCSE(9-1) SAM 2F Q9f]

Factorise

$$5c + 30$$

.....

Question 9

[Edexcel IGCSE May2016(R)-3H Q2a]

Factorise fully

$$2x^2 - 4x$$

.....

Question 10

[Edexcel IGCSE May2016-3H Q7a]

Factorise

$$3y^2 + 2y$$

.....

Question 11

[Edexcel IGCSE May2014(R)-4H Q17b]

Simplify fully

$$\frac{2x^2 - 8}{4x^2 - 8x}$$

.....

Question 12

[Edexcel IGCSE May2015-4H Q7e]

Factorise fully $20e^5f^2 - 16e^2f$

.....

Question 13

[Edexcel IGCSE May2016-3H Q2b]

There are 4 pens in a small box of pens.
There are 10 pens in a large box of pens.

Ami buys x small boxes of pens and y large boxes of pens.
She buys a total of T pens.

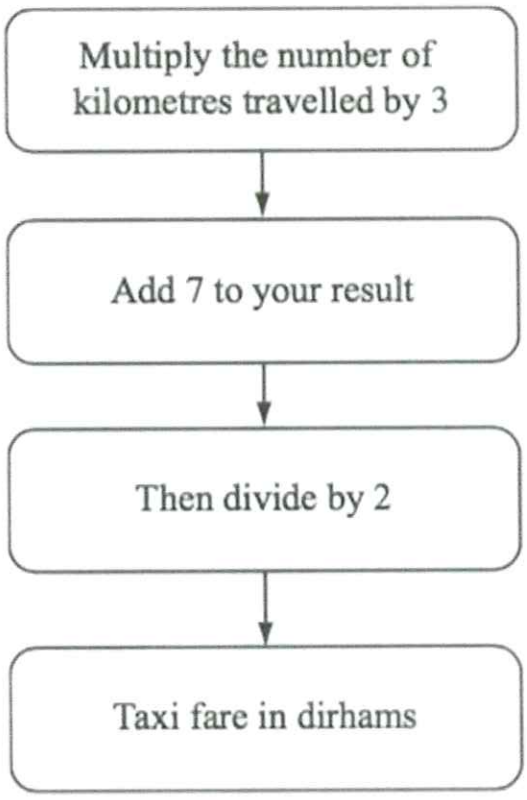
Write down a formula for T in terms of x and y.

$T =$ .....

Question 14

[Edexcel IGCSE June2011-3H Q10]

This rule can be used to work out the fare, in dirhams, for a taxi journey in Dubai.



Find a formula for the fare, C dirhams, for a taxi journey of d kilometres.

$C =$ .....

Question 15

[Edexcel IGCSE June2010-4H Q7a]

Rectangular tiles have width $(x + 1)$ cm and height $(5x - 2)$ cm.

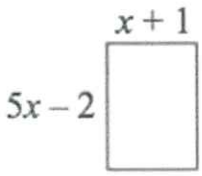


Diagram **NOT** accurately drawn

Some of these tiles are used to form a large rectangle.
The large rectangle is 7 tiles wide and 3 tiles high.

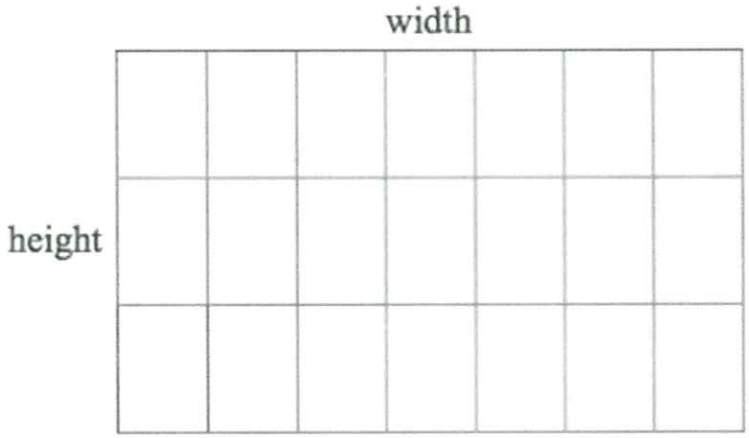


Diagram **NOT** accurately drawn

The perimeter of the large rectangle is 68 cm.

Write down an expression in x which equal 68.

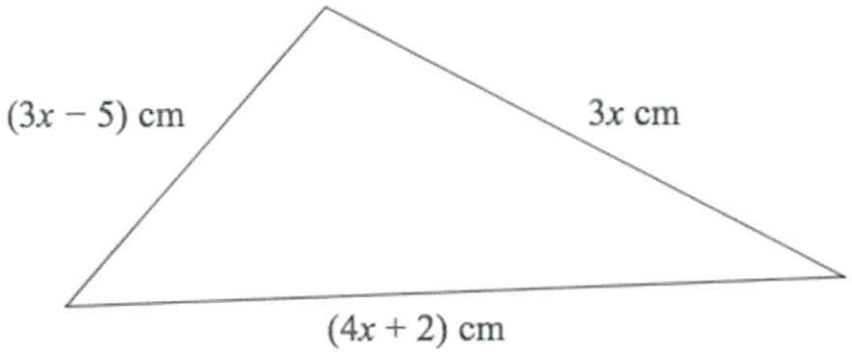
..... $= 68$

Question 16

[Edexcel IGCSE Jan2015-4H Q8]

The diagram shows a triangle.

Diagram **NOT** accurately drawn



The lengths of the sides of the triangle are $3x$ cm, $(3x - 5)$ cm and $(4x + 2)$ cm.

The perimeter of the triangle is 62 cm.

Work out the value of x .

.....

Question 17

[Edexcel IGCSE May2012-3H Q7]

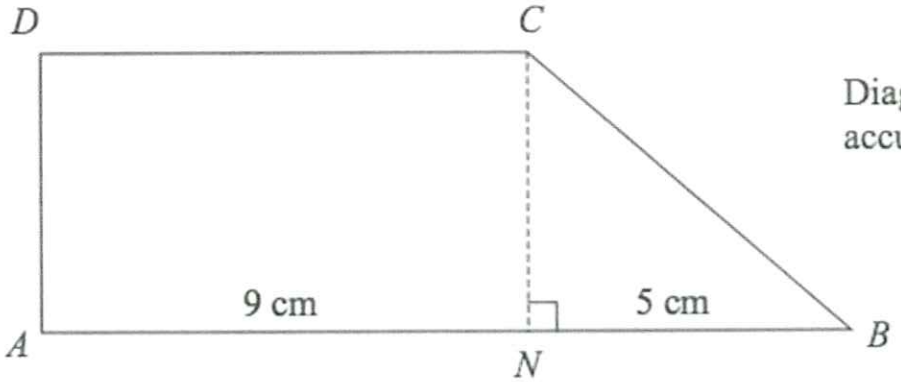


Diagram **NOT** accurately drawn

The shape *ABCD* is made from a rectangle *ANCD* and the right-angled triangle *NBC*.
ANB is a straight line.
AN = 9 cm.

NB = 5 cm.
The area of rectangle *ANCD* is 36 cm^2

Work out the area of shape *ABCD*.

..... cm^2

Question 18

[Edexcel IGCSE June2011-4H Q6a]

The diagram shows a trapezium PQRS.

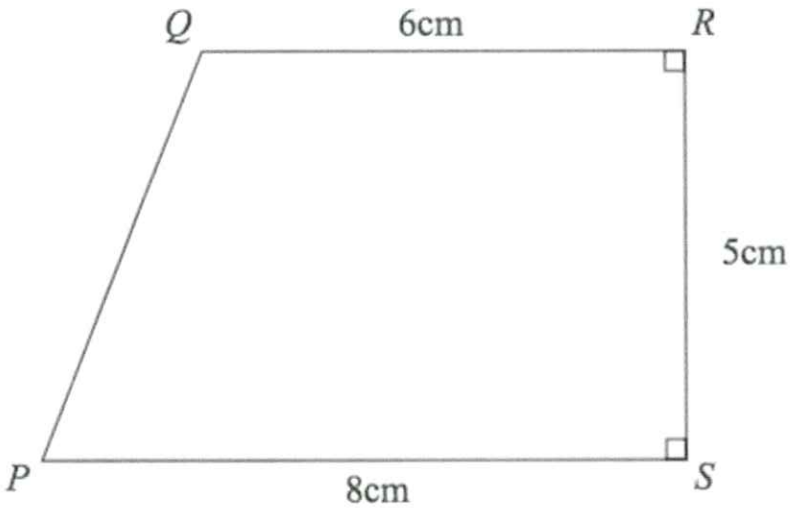


Diagram **NOT** accurately drawn

Calculate the area of the trapezium PQRS.

..... cm^2

Question 19

[Edexcel IGCSE Jan2012-4H Q9a]

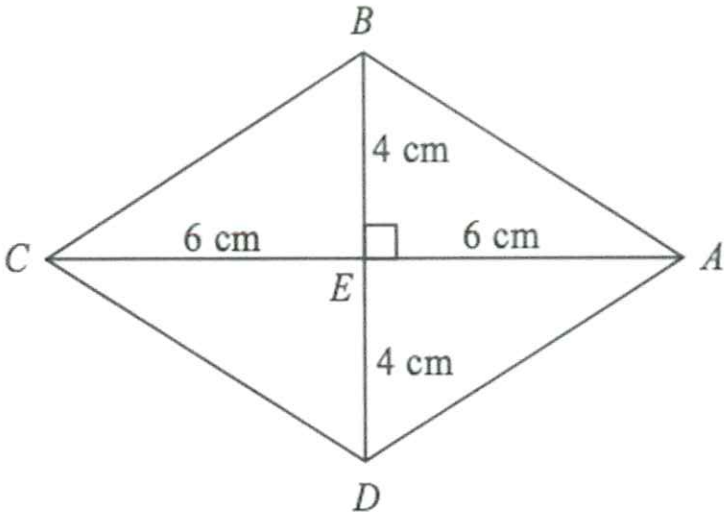


Diagram **NOT** accurately drawn

$ABCD$ is a rhombus.
The diagonals AC and BD cross at the point E .$AE = CE = 6$ cm$BE = DE = 4$ cm
Angle $AEB = 90^{\circ}$

Work out the area of the rhombus.

..... cm^2

Question 20

[Edexcel IGCSE Jan2016-1F Q9b]

PQR is an isosceles triangle.

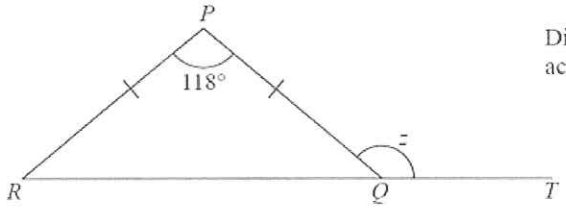


Diagram **NOT** accurately drawn

$PQ = PR$

Angle $RPQ = 118^\circ$ RQT is a straight line.

Work out the size of angle z .

$z =$ ..... °

Question 21

[Edexcel GCSE Nov2015-1F Q20, Nov2015-1H Q6]

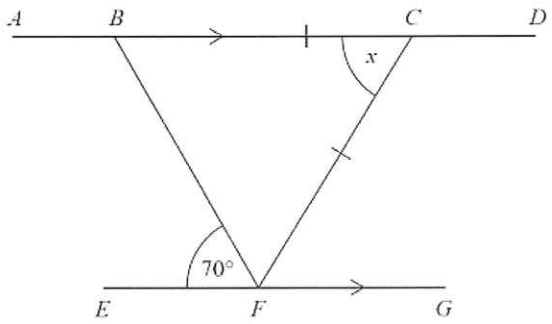


Diagram **NOT** accurately drawn

$ABCD$ and EFG are parallel lines.$BC = CF$

Angle $BFE = 70^\circ$

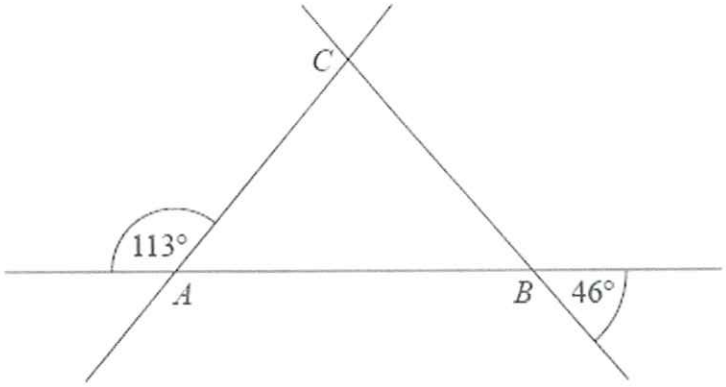
Work out the size of the angle marked x .

$x =$ ..... °

Question 22

[Edexcel GCSE(9-1) Mock Set 1 Autumn 2016 3F Q12 Edited]

Here is triangle ABC with each of its sides extended.



Is the triangle ABC isosceles? Give a reason for each stage of your working.

[ ] Yes

[ ] No

Question 23

[Edexcel IGCSE May2016(R)-4H Q13a]

Write 250 000 in standard form.

.....

Question 24

[Edexcel IGCSE May2016-4H Q11b]

The table gives the populations of each of five countries in 2014

Country	Population
China	1.4×10^9
India	1.3×10^9
USA	3.2×10^8
Ethiopia	9.7×10^7
Mexico	1.2×10^8

The population of Russia in 2014 was 140000000

Write 140000000 in standard form.

.....

Question 25

[Edexcel IGCSE Jan2015-4H Q13a]

Write 0.000076 in standard form.

.....

Question 26

[Edexcel IGCSE May2013-4H Q14b]

The table shows the surface areas, in km^2, of five oceans.

Ocean	Surface area (km^2)
Atlantic	7.68×10^7
Indian	6.86×10^7
Pacific	1.56×10^8
Southern	2.03×10^7
Arctic	1.41×10^7

Work out the total surface area, in km^2, of all five oceans.
Give your answer in standard form.

.....

Question 27

[Edexcel IGCSE May2014-4H Q3a]

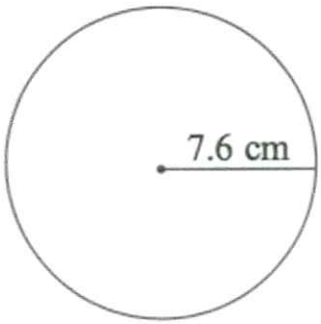


Diagram **NOT** accurately drawn

A circle has a radius of 7.6 cm.

Work out the area of the circle.
Give your answer correct to 3 significant figures.

..... cm^2

Question 28

[Edexcel IGCSE May2016-3H Q10]

The diagram shows a circle inside a rectangle.

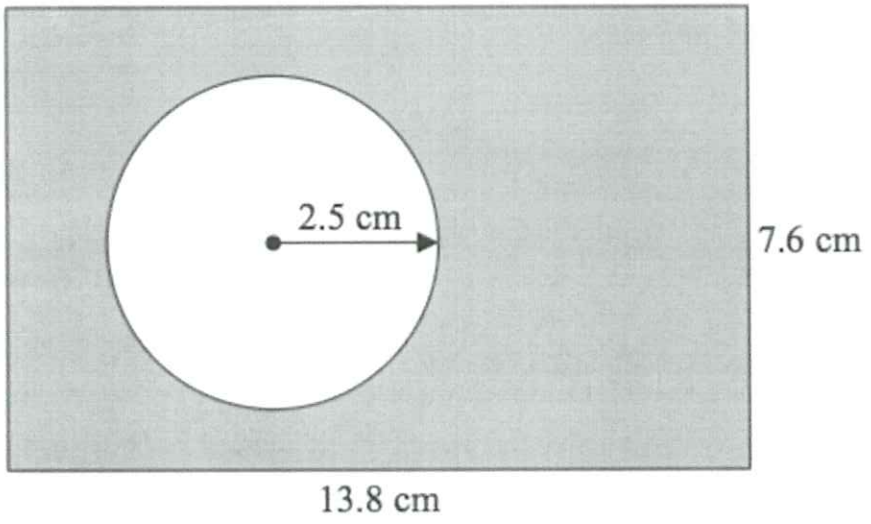


Diagram **NOT** accurately drawn

Work out the area of the shaded region.
Give your answer correct to 3 significant figures.

..... cm^2

Question 29

[Edexcel IGCSE Jan2014-3H Q12]

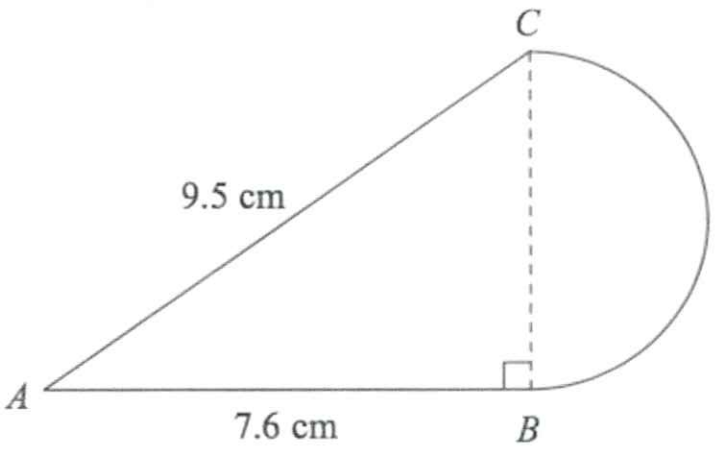


Diagram **NOT** accurately drawn

The diagram shows a shape made from triangle *ABC* and a semicircle with diameter *BC*.
Triangle *ABC* is right-angled at *B*.
AB = 7.6 cm and *AC* = 9.5 cm.

Calculate the area of the shape.
Give your answer correct to 3 significant figures.

..... cm^2

Question 30

[Edexcel IGCSE May2014-4H Q2b]

Sarah has a biased 4-sided spinner.
The spinner can land on 1, 2, 3 or 4.

The probability that the spinner will land on 1, 2 or 4 is given in the table.

Number	1	2	3	4
Probability	0.4	0.35		0.1

Ryan is going to spin the spinner 80 times.

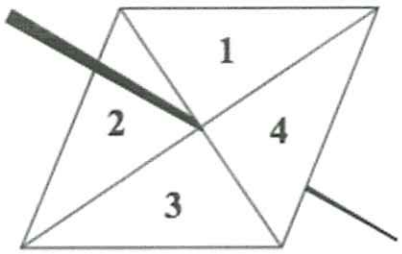
Work out an estimate for the number of times he should expect the spinner to land on 2.

..... times

Question 31

[Edexcel IGCSE Jan2017(R)-4H Q2c]

Here is a biased 4-sided spinner.



The spinner is spun.

The table shows the probability that the spinner lands on 1 and the probability that it lands on 2.

Number	1	2	3	4
Probability	0.15	0.4		

Daljit is going to spin the spinner 160 times.

Work out an estimate for the number of times the spinner will land on 2.

..... times

Question 32

[Edexcel IGCSE(9-1) SAM 1F Q13a]

A box contains four different kinds of sweets.
Debbie takes at random a sweet from the box.
The table shows the probabilities that Debbie takes an orange sweet or a cola sweet or a lemon sweet.

Sweet	Probability
orange	0.15
cola	0.40
lemon	0.35
strawberry	

Work out the probability that Debbie takes a strawberry sweet.

.....

Question 33

[Edexcel IGCSE(9-1) SAM 2F Q4b]

There are 30 counters in a bag.
1 of the counters is yellow.
The rest of the counters are either blue or green.

Sharita takes a counter from the bag at random.

The probability that Sharita will take a blue counter from the bag is $\frac{3}{10}$.

Find the probability that she will **not** take a blue counter.

.....

Question 34

[Edexcel GCSE(9-1) Mock Set 3 Autumn 2017 3F Q22b, 3H Q4b]

There are only red counters, blue counters and green counters in a bag.

number of red counters : number of blue counters : number of green counters = 1 : 3 : 7

A counter is going to be taken at random from the bag.

Jamie takes at random a counter from the bag and records the colour of the counter.
He then puts the counter back in the bag.

Jamie does this a number of times.
He records a total of 68 blue counters.

Work out an estimate for the total number of times Jamie takes a counter from the bag.

.....

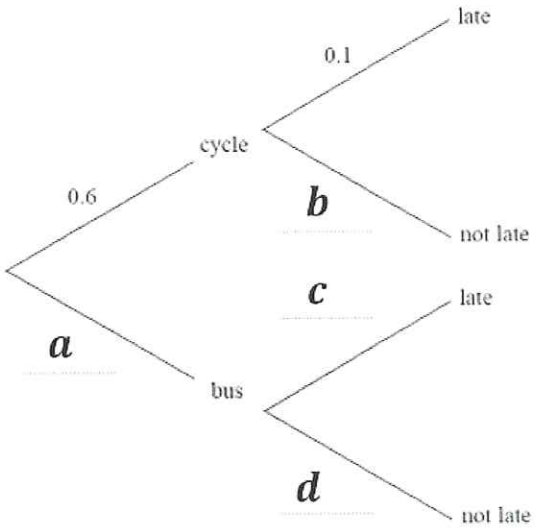
Question 35

[Edexcel IGCSE Jan2016(R)-4H Q17a]

Chaiwat either cycles to work or goes by bus.

On any day that he goes to work, the probability that he cycles is 0.6.
When he cycles, the probability that he is late is 0.1.
When he goes by bus, the probability that he is late is 0.3.

Complete the probability tree diagram.



$a =$ .....

$b =$ .....

$c =$ .....

$d =$ .....

Answers

Question 1

"24 OR 36"

Question 2

1 , 2 , 4 , 7 , 14 , 28

Question 3

"16, 32, 56 OR 14, 32, 56 OR 16, 28, 56 OR 14, 32, 56"

Question 4

52

Question 5

$10g + 35$

Question 6

$10p - 15$

Question 7

$8y - 2$

Question 8

$5(c + 6)$

Question 9

$2x(x - 2)$

Question 10

$y(3y + 2)$

Question 11

$\frac{x+2}{2x}$

Question 12

$4e^2f(5e^3f - 4)$

Question 13

$T = 4x + 10y$

Question 14

$C = \frac{3d+7}{2}$

Question 15

$14(x + 1) + 6(5x - 2)$

Question 16

$x = 6.5$

Question 17

46 cm^2

Question 18

35 cm^2

Question 19

48 cm^2

Question 20

$z =$ 149 °

Question 21

$x =$ 40 °

Question 22

Yes

Question 23

2.5×10^5

Question 24

1.4×10^8

Question 25

7.6×10^{-5}

Question 26

$$3.358 \times 10^8$$

Question 27

181 cm^2

Question 28

any value in the range 85 cm^2 to 85.3 cm^2

Question 29

34.4 cm^2

Question 30

28 times

Question 31

64 times

Question 32

0.1

Question 33

$\frac{7}{10}$

Question 34

"249 OR 250"

Question 35

$a =$ 0.4 and $b =$ 0.9 and $c =$ 0.3 and $d =$ 0.7

stem and leaf

Question 1

[Edexcel GCSE Nov2014-1F Q15c]

The stem and leaf diagram gives information about the heights, in cm, of the tomato plants in a garden.

2	3	6	7			
3	1	2	2	4	6	7
4	0	0	3	8	9	
5	2	4	5	6		

Key : 3 | 1 means 31 cm

Work out the range of the heights.

..... cm

Question 2

[Edexcel GCSE Nov2016-2H Q1 Edited]

Here are the heights, in mm, of 20 plants.

53 44 48 56 48 64 51 33 41 44

31 52 55 63 60 56 47 61 37 56

Draw an ordered stem and leaf diagram for these heights.

Key: 3 | 1 = 31 mm

3	.....
4	.....
5	.....
6	.....

Question 3

[Edexcel GCSE(9-1) Mock Set 3 Autumn 2017 1H Q9aii]

The stem and leaf diagram shows the ages, in years, of 25 people.

1	7	7	8	9							
2	1	2	4	4	5	5	6	7	8	9	9
3	0	1	2	2	3	4	5	6			
4	0	1									

Key: 1 | 7 represents 17 years

One of these people is chosen at random.

What is the probability that this person is 30 years of age or older?

.....

Answers

Question 1

33 cm

Question 3

$\frac{10}{25}$

Mixed Practise Questions and answers for your Memory Platform Revision

Test 30

There are **7 questions** in this test. Give yourself **10 minutes** to answer them all.
You may **not** use a calculator for this test.

1. Circle the correct expansion of $a(b + 3)$.

$ab + 3$ $\quad$ $3a + b$ $\quad$ $ab + 3a$ $\quad$ $3ab$

[1]

2. Circle the best estimate to $\dfrac{4.1^2}{\sqrt{9.05 + 7.009}}$.

3 $\quad$ 4 $\quad$ 5 $\quad$ 6

[1]

3. Write 4 : 3.5 in its simplest form.

.....

[1]

4. Anna sits on a bench on a rainy day and counts the number of people who walk past her. She finds that 40 people walk past her and 10 have an umbrella. She says:

"The probability of a person walking past this bench with an umbrella on any particular day is $\frac{1}{4}$."

Write down a reason why Anna's statement is incorrect.

.....

.....

[1]

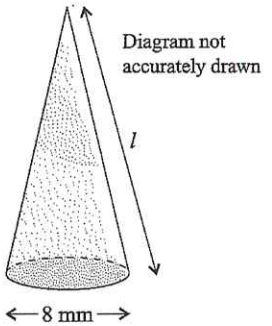
5. Calculate $(8.1 \times 10^{15}) + (9.0 \times 10^{16})$. Give your answer in standard form.

.....

[2]

6. The diagram below shows a solid cone. The total surface area of the cone is 40π mm^2. Find the slant height, l.

Curved surface area of a cone	$= \pi r l$



$l =$ ..... mm

[3]

7. £x is split between Ellis, Nicole and Aaliyah in the ratio $a : b : a + b$. Aaliyah receives three times as much money as Ellis. Nicole receives £80.

Find the value of x.

$x =$ .....

[3]

/ 12

Test 31

There are **7 questions** in this test. Give yourself **10 minutes** to answer them all.
You may **not** use a calculator for this test.

1. Which of these is the largest? Circle your answer.

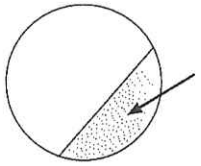
5^2 2^4 3^3 17^1

[1]

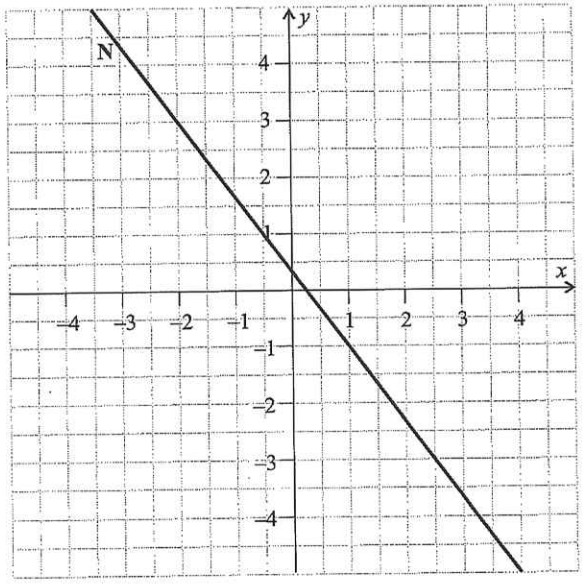
2. Part of the circle on the right has been shaded.
What is this part of the circle called? Circle your answer.

chord segment arc sector

[1]



Use the axes on the right to answer questions 3-4.



3. Draw the graph of $y = x$ on the axes. Label your graph **M**.

[1]

4. Find the exact gradient of the line labelled **N**.

.....

[2]

5. x satisfies the equation $\frac{2x}{x^2} - x = 3x$. Find the exact value of x^2 in its simplest form.

$x^2 =$ .....

[2]

6. Syrup is poured into a container. The mass, m, of syrup in the container is directly proportional to the volume, v, of the syrup. When there is 2000 cm^3 of syrup, the mass is 2740 g.

Write an equation for the mass in terms of the volume in the form $m = kv$, where k is a decimal number to be found.

.....

[2]

7. Blaire and Yuri are studying different sections of a map, each containing the same number of towns. There are 112 towns in total.

$\frac{2}{7}$ of the towns in Blaire's section are coastal and $\frac{3}{8}$ of the towns in Yuri's section are coastal.

What fraction of all the towns on the map are coastal?

.....

[3]

/ 12

Test 32

There are **7 questions** in this test. Give yourself **10 minutes** to answer them all.
You may use a calculator for this test.

1. A bag of sweets contains 2 cola bottles, 5 sherbets and 1 toffee. Two sweets are chosen at random from the bag. What is the probability that both of the sweets chosen are toffee? Circle your answer.

0 $\quad \frac{1}{8} \quad \frac{2}{8} \quad \frac{1}{64}$

[1]

2. Which of these expressions would give you the value of x after a decrease of 12%? Circle your answer.

$0.12x \quad 1.12x \quad 0.88x \quad 1.88x$

[1]

3. $7^a \times 7^{12} = 7^{16}$

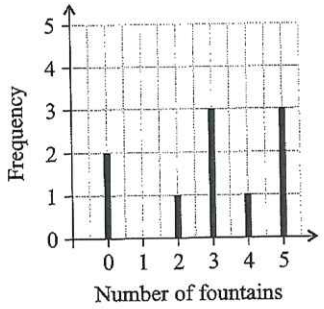
Find the value of a.

$a =$ .....

[1]

4. The vertical line graph on the right shows information about the number of fountains in 10 parks.

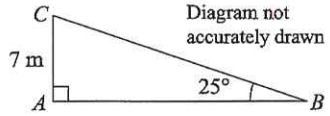
Find the mean number of fountains.



.....

[2]

5. Find the length of the side AB in the triangle ABC below. Give your answer to two decimal places.



..... m

[2]

6. An empty bus has a mass of 20 000 pounds. The driver has a mass of 10 stone.
Find the combined mass of the bus and the driver in kilograms.

Give your answer to three significant figures.

1 stone = 14 pounds
1 kg ≈ 2.2 pounds

..... kg

[2]

7. There are 52 crates in a company's warehouse. Each crate contains 30 tins of tomatoes. They only sell full crates and they always send just enough full crates so the orders are satisfied.

- A supermarket orders 400 tins.
- A market stall orders 70% as many tins as the supermarket.

How many tins will be left in the warehouse after sending these orders?

.....

[3]

/ 12

Test 33

There are **7 questions** in this test. Give yourself **10 minutes** to answer them all.
You may use a calculator for this test.

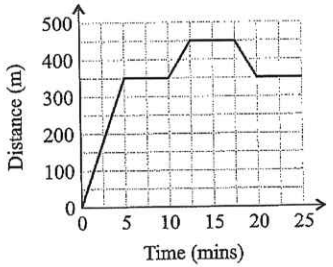
1. The graph on the right shows the distance that a cat travelled from its owner's house over 25 minutes.

After how many minutes did the cat start travelling back towards the house? Circle your answer.

5 minutes 12.5 minutes

17.5 minutes 20 minutes

[1]



2. Which of these is **not** the size of an exterior angle of a regular polygon? Circle your answer.

72° 90° 105° 120°

[1]

3. The length of the M1 motorway is 311 km, to the nearest kilometre.
What is the minimum possible length of the M1 motorway?

..... km
[1]

4. Lester and Tasha share an amount of money in the ratio 1 : 8.
Tasha gets £35 more than Lester. How much money does Lester get?

.....
[2]

5. The following data values have been collected: 3, 5, 8, 9, 10, 11, 12, 78.
Tick one box to show the average that would be the most useful to use for this set of data.
Give a reason why you wouldn't use each of the other two averages.

Mean ☐ Median ☐ Mode ☐

Reason 1: .....

.....

Reason 2: .....

.....
[2]

6. The sum of an arithmetic sequence with n terms is given by the formula $S = \frac{n(a+l)}{2}$, where a is the first term and l is the last term.

The sum of a sequence with 17 terms is 340.
Use this to find an equation for l in terms of a only.

.....
[2]

7. The triangle on the right has a base of length 3 cm and a hypotenuse of length 5 cm.

The unshaded region is mathematically similar to the whole triangle.
Its height and base are half the height and base of the whole triangle.

Find the area of the **shaded** region of the triangle.

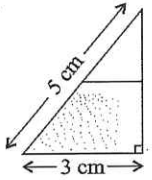


Diagram not accurately drawn

..... cm^2
[3]

/ 12

Test 34

There are 7 **questions** in this test. Give yourself **10 minutes** to answer them all.
You may use a calculator for this test.

1. Luca sets off on a journey at 23:30. He arrives at his destination at 03:12.
How long did his journey take? Circle your answer.

3 hours 32 mins 4 hours 32 mins 3 hours 42 mins 4 hours 42 mins

[1]

2. Circle the correct answer to this calculation: $\begin{pmatrix}3\\-1\end{pmatrix}+\begin{pmatrix}3\\-1\end{pmatrix}$.

$\begin{pmatrix}6\\0\end{pmatrix}$ $\begin{pmatrix}9\\1\end{pmatrix}$ $\begin{pmatrix}6\\-2\end{pmatrix}$ $\begin{pmatrix}9\\-2\end{pmatrix}$

[1]

3. Factorise the expression $12p - 8q$.

.....

[1]

4. The rectangle below has a width of 10 cm. It needs to be shaded in the ratio 2 : 3, where the shaded region is smaller than the unshaded region. Accurately shade the rectangle in this ratio.

[2]

5. Solve the inequality $2(n + 1) < 5n$.

.....

[2]

6. Sand is poured onto a set of weighing scales. The mass of the sand on the scales is increasing at a rate of 35% each second. The sand on the scales initially weighs 4 g. How much does it weigh after 10 seconds, to one decimal place?

..... g

[2]

7. Hannah makes a note of the weather every day. She writes either sunny, cloudy, rainy or snowy.

She collects data for 60 days and gets the following results:

- The probability of a random day being sunny was 0.4.
- It snowed on 3 days.
- The ratio of rainy days to snowy days was 5 : 1.

What was the probability of a random day being cloudy?

.....

[3]

/ 12

Answers

Section One: Number

Test 1 — Pages 2–3

1. 49 *[1 mark]*
2. $\frac{5}{4}=\frac{30}{24}$, $\frac{11}{12}=\frac{22}{24}$, $\frac{7}{8}=\frac{21}{24}$ and $\frac{5}{6}=\frac{20}{24}$, so $\frac{5}{6}$ is the smallest *[1 mark]*
3. 19.1 (3 s.f.) *[1 mark]*
4. $\frac{7}{10}+\frac{8}{15}=\frac{21}{30}+\frac{16}{30}=\frac{37}{30}=1\frac{7}{30}$ ***[1 mark for putting the fractions over a common denominator, 1 mark for the correct answer]***
5. The shark is approximately 4 times the length of the squid *[1 mark]*, so an estimate for the length of the squid is 2.4 ÷ 4 = 0.6 m *[1 mark]*.
6. Take the highest power of each number from A or B. So that's 2 (from A), 3^3 (from A), 7^3 (from B) and 11 (from B). Then the LCM is $2 \times 3^3 \times 7^3 \times 11$. ***[2 marks for the correct answer, otherwise 1 mark for two or three terms correct in the product]***
7. 3 adult tickets cost: 3 × £7.50 = £22.50 and 4 children's tickets cost 4 × £4.50 = £18 *[1 mark for both]*. She spends £22.50 + £18 = £40.50 on tickets, so has £50 – £40.50 = £9.50 to spend on popcorn *[1 mark]*. 6 × £1.40 = £8.40 and 7 × £1.40 = £9.80, so the largest possible number of tubs of popcorn she can buy is 6 *[1 mark]*.

Test 2 — Pages 4–5

1. $\frac{3}{8}$ *[1 mark]*
2. 6.85×10^9 *[1 mark]*
   Although 68.5×10^8 and 685×10^7 multiply to give the right number, they're not in standard form as the numbers at the front aren't between 1 and 10.
3. 14 and 15 *[1 mark]*
   The pair must involve one even and one odd number so that they add to give an odd number. 14 is the only even number in the list so you can try pairing it with the other four numbers. 14 + 15 = 29 which is prime.
4. $\sqrt{25}+(13-5)\times 3=5+8\times 3$
   $=5+24=29$
   [1 mark for carrying out the operations in the correct order, 1 mark for the correct answer]
5. Multiples of 15: 15, 30, 45, 60, ...
   Multiples of 9: 9, 18, 27, 36, 45, ...
   So the lowest common multiple of 15 and 9 is 45. The back-ups occur at the same time after 45 minutes.
   [1 mark for finding multiples of 15 and 9, 1 mark for identifying the LCM]
6. $8\times 3\frac{3}{4}=8\times\frac{15}{4}=\frac{120}{4}=30$ kg
   [1 mark for a correct method, 1 mark for the correct answer]
7. Length = 6.2 × 2 = 12.4 cm
   Area = 12.4 × 6.2
   12.4 × 10 = 124, 6.2 × 10 = 62

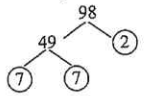
   $$\begin{array}{r} 124 \\ \times\ \ 62 \\ \hline 248 \\ +7\,4\,4\,0 \\ \hline 7688 \end{array}$$

   So 12.4 × 6.2 = 7688 ÷ 100
   = 76.88 cm²
   [1 mark for correctly calculating the length, 1 mark for attempting to calculate 12.4 × 6.2 or 124 × 62, 1 mark for the correct final answer]

Test 3 — Pages 6–7

1. $\frac{3}{8}\times\frac{4}{5}=\frac{12}{40}=\frac{3}{10}$ *[1 mark]*
2. 11 is not a factor of 84 and 12 is not a factor of 66, so you can rule out these options. 6 is a factor of both and it is higher than 2, so HCF = 6 *[1 mark]*.
3. $4^3=4\times4\times4=16\times4=64$ *[1 mark]*
4. 62% = 0.62, $\frac{13}{20}=0.65$, $\frac{2}{3}=0.66...$
   So in order, the values are:
   62%, 0.625, $\frac{13}{20}$, $\frac{2}{3}$
   [1 mark for converting all the values to the same form, 1 mark for the correct order]
5. 324 – 108 = 216 *[1 mark]*
   216 ÷ 2 = 108, so 108 people left the longer queue to join the shorter one *[1 mark]*.
6. Each big equilateral triangle is $\frac{1}{6}$ of the hexagon. Each small equilateral triangle is $\frac{1}{4}$ of the big equilateral triangle. So each small equilateral triangle is $\frac{1}{6}\times\frac{1}{4}=\frac{1}{24}$ of the hexagon *[1 mark]*.
   There are 3 small triangles shaded, so the fraction of the hexagon that is shaded is $3\times\frac{1}{24}=\frac{3}{24}=\frac{1}{8}$ *[1 mark]*.
7. $(3.4\times10^9)\div(1.7\times10^6)$
   $=(3.4\div1.7)\times(10^9\div10^6)$
   $=2\times10^{9-6}=2\times10^3=2000$
   [1 mark for dividing the number terms, 1 mark for dividing the powers of 10, 1 mark for the correct answer given as an ordinary number]

Test 4 — Pages 8–9

1. 9 *[1 mark]*
2. $2.8 \le x < 2.9$ *[1 mark]*
   Remember, truncation is chopping off decimal places — so x can be any value that starts with 2.8...
3. In ascending order, the numbers are –1.8, –1.72, –1.68, –0.86.
   So the correct order of the locations is B, D, A, C *[1 mark]*.
4. $\frac{2.3^2-\sqrt{6.25}}{(4.1+1.8)\times1.6}=\frac{2.79}{9.44}$
   = 0.29555084(74576)
   [2 marks for the correct answer, otherwise 1 mark for the correct numerator (2.79) or the correct denominator (9.44)]
5. 35 sweets is $1-\frac{7}{12}=\frac{5}{12}$.
   So $\frac{1}{12}=35\div5=7$, which means Shiro had 7 × 12 = 84 sweets to begin with.
   [1 mark for a correct method, 1 mark for the correct answer]
6. 

   So $98 = 2 \times 7^2$
   [1 mark for a correct method, 1 mark for the correct answer]
7. $\frac{3}{10}$ of 500 = 150, so Medina makes 150 × £2.20 = £330 from the market stall. $\frac{3}{5}$ of 500 = 300, so she makes 300 × £2.35 = £705 from the farm shop. That leaves 500 – 150 – 300 = 50 jars, so she makes 50 × £2.05 = £102.50 from the village fair. In total, she makes £330 + £705 + £102.50 = £1137.50.
   [1 mark for finding the number of jars sold at each place, 1 mark for finding the amount of money made at each place, 1 mark for the correct answer]

Test 5 — Pages 10–11

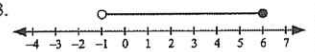
1. 7281.1717 *[1 mark]*
2. $\sqrt{29}$ *[1 mark]*
   $\sqrt{29}$ = 5.385... which isn't a whole number (integer).
3. 148.20 (2 d.p.) *[1 mark]*
4. The race is made up of 81 ÷ 1.5 = 54 laps *[1 mark]*, so each member of the team must run 54 ÷ 9 = 6 laps *[1 mark]*.
5. $1-\frac{2}{7}=\frac{5}{7}$, then $\frac{5}{7}\times2268=1620$ ***[1 mark for a correct method, 1 mark for the correct answer]***
6. Maximum on Friday: 14 349
   Maximum on Saturday: 14 499
   Maximum total:
   14 349 + 14 499 = 28 848
   [1 mark for either the correct value on Friday or on Saturday, 1 mark for the correct final answer]
7. One year ago, the sum of Justin and his grandma's ages would be 92 – 2 = 90. If Justin's grandma was five times older than him, 90 = 6 × Justin's age, so Justin was 90 ÷ 6 = 15 one year ago, and his grandma was 5 × 15 = 75.
   This means that Justin is now 16 and his grandma is now 76.
   [1 mark for a correct method, 1 mark for finding their correct ages last year, 1 mark for finding their correct ages this year]

Test 6 — Pages 12–13

1. 3.25 *[1 mark]*
2. All square numbers have an odd number of factors *[1 mark]*.
3. 8653 *[1 mark]*
4. $\frac{9.8^2+76.24}{12\times3.06}\approx\frac{10^2+80}{10\times3}$
   $=\frac{100+80}{30}=\frac{180}{30}=6$
   [1 mark for rounding correctly, 1 mark for a correct estimate]
5. Order by the powers of 10:
   3.14×10^4, 5.08×10^{-3}, 5.14×10^{-4}, 8.29×10^{-5}
   [2 marks for fully correct order, otherwise 1 mark for correct highest and lowest values]
6. 16 + (–13) + 9 = 12, so each row and column must add up to 12.
   B = 12 – (–13) – 32 = –7
   So A = 12 – (–7) – 0 = 19
   [1 mark for a correct method, 1 mark for the correct value of A]
7. Watermelons are buy one get one free, so £2.25 will get her two watermelons. So 12 watermelons will cost 6 × £2.25 = £13.50 *[1 mark]*. Four pineapples cost 3 × £1.50 = £4.50, so 18 (4 × 4 + 2) pineapples will cost (4 × £4.50) + (2 × £1.50) = £21 *[1 mark]*. So Ruby spends £13.50 + £21 = £34.50 *[1 mark]*.

Section Two: Algebra

Test 7 — Pages 14–15

1. $x=\frac{2}{5}$ *[1 mark]*
2. Difference in terms is 2, so the rule will contain $2n$. 2 × 1 = 2 but the first term is 3, so you need to add 1. So the rule is $2n + 1$ *[1 mark]*.
3. 

   [1 mark]
4. $z = xy + 2$, so $z - 2 = xy$ *[1 mark]*, so $\frac{z-2}{y}=x$ *[1 mark]*
5. $4ij(j-2)-2(j+1)$
   $=4ij^2-8ij-2j-2$ *[1 mark]*
   $=-2-8ij-2j+4ij^2$
   $=-2(1+4ij)-2j(1-2ij)$ *[1 mark]*
6. $y^2-49=y^2-7^2$
   $=(y+7)(y-7)$
   [2 marks for the correct factorisation, otherwise 1 mark for attempting to use the difference of two squares]
7. Perimeter of first rectangle
   $=2\times(1+2x)+2\times4$
   $=(2+4x)+8=10+4x$
   Perimeter of second rectangle
   $=2\times5x+2\times x=10x+2x=12x$
   [1 mark for either perimeter correct]
   The perimeters are equal so:
   $10+4x=12x$ *[1 mark]*
   $\Rightarrow 10=8x \Rightarrow x=\frac{10}{8}=1\frac{1}{4}$ *[1 mark]*

Test 8 — Pages 16–17

1. πr^2 *[1 mark]* *An equation has to contain an equals sign.*
2. $4m + 6n = 26$ *[1 mark]*
3. $-2x > 100 \Rightarrow x < 100 \div -2$
   $\Rightarrow x < -50$ *[1 mark]*
   Don't forget to flip the inequality sign around when dividing by a negative.
4. Either $x - 2 = 0$ or $x + 1 = 0$, so $x = 2$ or $x = -1$ *[1 mark]*.
5. $32a^2b^3-4a^3=4(8a^2b^3-a^3)$
   $=4a^2(8b^3-a)$
   [2 marks for the fully factorised expression, otherwise 1 mark for a partially factorised expression]
6. $x+5y=12 \xrightarrow{\times4} 4x+20y=48$

   $$\begin{array}{rl} 4x+20y= & 48 \\ -\ 4x+\ \ 2y= & -6 \\ \hline 18y= & 54 \\ y= & 3 \end{array}$$

   $x + 5y = 12$
   $\Rightarrow x = 12 - (5 \times 3) = -3$
   [1 mark for scaling one of the equations, 1 mark for x, 1 mark for y]
7. First term 3 and fourth term 24, so $24 = 3 \times r \times r \times r$, where r is the common ratio *[1 mark]*.
   $\Rightarrow 24 = 3r^3 \Rightarrow r^3 = 8$
   $\Rightarrow r = \sqrt[3]{8} = 2$ *[1 mark]*
   The second term is 3 × 2 = 6 and the third term is 6 × 2 = 12 *[1 mark]*.

Test 9 — Pages 18–19

1. $p \div p + p - p$ *[1 mark]*
   This simplifies to 1.
2. $r = t + 3$ *[1 mark]*
3. $7(x+2)=(7\times x)+(7\times2)$
   $=7x+14$ *[1 mark]*
4. $u=\frac{\frac{1}{2}+1}{3\times1}=\frac{\frac{3}{2}}{3}=\frac{3}{6}=\frac{1}{2}$ *[1 mark]*

5. Let n be a whole number.
Then $n+1$ is the next whole number, $n+2$ is the next whole number after that, and so on.
$n + (n+1) + (n+2)$
$+ (n+3) + (n+4)$ *[1 mark]*
$= 5n + 10 = 5(n+2)$
Since the sum is 5 × a whole number, it is divisible by 5. *[1 mark]*

6. $x^2 - 7x + 12 = (x-3)(x-4)$
[1 mark for 3 and 4, 1 mark for the correct signs]
$(x-3)(x-4) = 0$
$\Rightarrow x = 3,\ x = 4$ *[1 mark]*

7. White circles: 1, 1, 5, 5, 9, 9, ...
Ignoring repeats: 1, 5, 9, ... *[1 mark]*
The difference is 4 so the nth term rule will contain a $4n$ term. $4 \times 1 = 4$ but the first term is 1, so subtract 3.
So the rule is $4n - 3$ *[1 mark]*.
$4n - 3 = 113 \Rightarrow 4n = 116 \Rightarrow n = 29$
As this is a whole number, 113 is in the sequence. *[1 mark]*

Test 10 — Pages 20–21

1. Difference is 7 so the next term is $23 + 7 = 30$ *[1 mark]*.

2. $5x - 1 < 9 \Rightarrow 5x < 10$
$\Rightarrow x < 2$ *[1 mark]*

3. $x + (x^2 \times x^3) + x^5$
$= x + x^5 + x^5 = x + 2x^5$ *[1 mark]*

4. $20 - 8 = 12$
$12 \times 6 = 72$, so $D = 72$ *[1 mark]*

5. $(2x+9)^2 = (2x+9)(2x+9)$
$= (2x \times 2x) + (2x \times 9)$
$+ (9 \times 2x) + (9 \times 9)$ *[1 mark]*
$= 4x^2 + 18x + 18x + 81$
$= 4x^2 + 36x + 81$ *[1 mark]*

6. $2x = \frac{x-3}{2} \Rightarrow 4x = x - 3$ *[1 mark]*
$\Rightarrow 3x = -3 \Rightarrow x = -1$ *[1 mark]*

7. Let m = Mauritz's distance and d = Diane's distance.
$d = \frac{9}{14}m$ and $m + d = 1150$
[1 mark for setting up two equations]
So $m + \frac{9}{14}m = 1150$
$\Rightarrow \frac{23}{14}m = 1150$
$\Rightarrow m = 1150 \div \frac{23}{14} = 700$ miles
$\Rightarrow d = \frac{9}{14} \times 700 = 450$ miles
[1 mark for a correct method to solve the simultaneous equations, 1 mark for $m = 700$, 1 mark for $d = 450$]

Section Three: Graphs

Test 11 — Pages 22–23

1. 2 *[1 mark]*

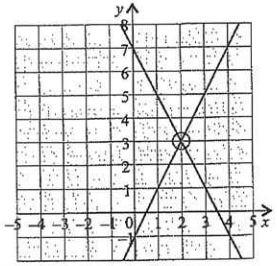
2. (3, –2) *[1 mark]*

3. Reading from the graph,
3 hectares ≈ 7.4 acres *[1 mark]*

4. When $H = 3$, $A \approx 7.4$, so:
$H = kA \Rightarrow 3 = k \times 7.4$
$\Rightarrow k = 3 \div 7.4$
$= 0.4054... = 0.4$ (1 d.p.)
So $H = 0.4A$
[1 mark for a correct method to find the value of k, 1 mark for the correct equation in the required form]

5. The two parallel lines have gradients of 1. One crosses the y-axis at –1 and the other crosses it at 4.
So their equations are $y = x - 1$ *[1 mark]* and $y = x + 4$ *[1 mark]*.

6. The first line has y-intercept 7 and the second line has y-intercept –1 and a gradient of 2. The only lines on Riaz's diagram to have these features are shown below.



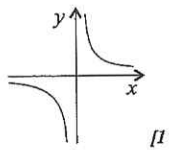
They intersect at (2, 3), so the solution is $x = 2$ and $y = 3$.
[2 marks for the correct answer, otherwise 1 mark for identifying one of the lines correctly]

7. Gradient $= \frac{\text{change in } y}{\text{change in } x}$
$= \frac{53-5}{24-0} = \frac{48}{24} = 2$ *[1 mark]*
The y-intercept is 5, so the line has equation $y = 2x + 5$ *[1 mark]*.
When $y = x$: $x = 2x + 5 \Rightarrow x = -5$
So coordinates are (–5, –5) *[1 mark]*.

Test 12 — Pages 24–25

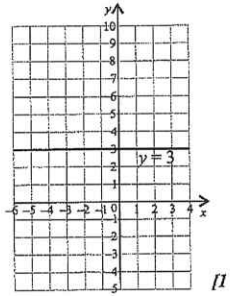
1. *A [1 mark]*

2.



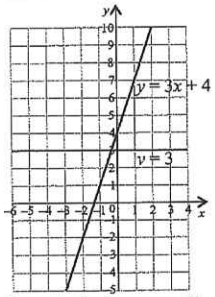
[1 mark]

3.



[1 mark]

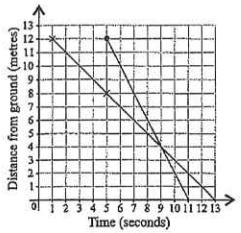
4.



[2 marks for the correct line, otherwise 1 mark for a line with a gradient of 3 or a y-intercept of 4]

5. Midpoint has coordinates:
$\left(\frac{3+9}{2}, \frac{10+4}{2}\right)$
$= \left(\frac{12}{2}, \frac{14}{2}\right) = (6, 7)$
[1 mark for a correct method, 1 mark for the correct answer]

6. Draw a straight line connecting the two crosses. For every 1 second, this line goes down 1 m so the gradient is –1. So Kurt is travelling at 1 m/s. This means Yui is travelling at 2 m/s, so his line has a gradient of –2 (for every 1 second, the line goes down by 2 m).



Yui's line reaches a distance of 0 m first, so Yui will reach the ground first.
[1 mark for each correct distance-time graph drawn (or speed calculated), 1 mark for the correct conclusion]

7. Gradient $= \frac{\text{change in } y}{\text{change in } x}$
$= \frac{7-1}{4-2} = \frac{6}{2} = 3$ *[1 mark]*
$y = mx + c \Rightarrow y = 3x + c$
At the point (2, 1):
$1 = 3(2) + c$ *[1 mark]*
$\Rightarrow 1 = 6 + c \Rightarrow c = 1 - 6 = -5$
So $y = 3x - 5$ *[1 mark]*

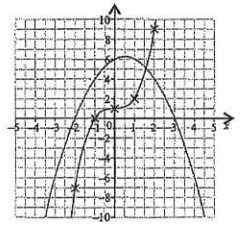
Test 13 — Pages 26–27

1. gradient *[1 mark]*

2. The gradient is negative, and the y-intercept is positive, so $y = -2x + 2$ *[1 mark]*.

3. The two solutions are where the graph crosses the x-axis, i.e. $x = -2$ and $x = 3$ *[1 mark]*.

4.



[1 mark for at least 3 points plotted correctly, 1 mark for a smooth line going through all points]

5. 40 sheets would cost £4 *[1 mark]*.
£4 + £2 = £6, so Hussein paid £6.
£6 pays for 70 sheets *[1 mark]*.

6. 50 sheets costs £5 and 70 sheets costs £6, so an additional 20 sheets costs £1. £1 ÷ 20 = 5p per sheet
[1 mark for a correct method, 1 mark for the correct answer]

7. The line is parallel to $y = 7x - 5$, so $m = 7$ *[1 mark]*.
It passes through the point (–2, 6), so $y = mx + c \Rightarrow y = 7x + c$
$\Rightarrow 6 = 7(-2) + c$ *[1 mark]*
$\Rightarrow 6 = -14 + c \Rightarrow c = 6 + 14 = 20$
So $y = 7x + 20$ *[1 mark]*

Section Four: Ratio, Proportion and Rates of Change

Test 14 — Pages 28–29

1. $3 : 4 = (3 \times 7) : (4 \times 7)$
$= 21 : 28$ *[1 mark]*

2. Pressure $= \frac{\text{force}}{\text{area}}$
$= \frac{400}{4} = 100$ N/m² *[1 mark]*

3. $24 \div 3 = 8$, so it will take
$2 \times 8 = 16$ hours *[1 mark]*

4. 5 km = 5000 m *[1 mark]*
Time taken $= \frac{\text{distance}}{\text{speed}}$
$= \frac{5000}{25} = 200$ seconds *[1 mark]*

5. It can feed 5 birds for 14 days, so it can feed 1 bird for $14 \times 5 = 70$ days, and 7 birds for $70 \div 7 = 10$ days
[1 mark for a correct method, 1 mark for the correct answer]

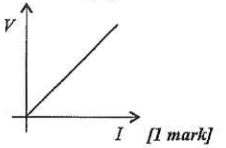
6. She has completed $\frac{3}{8}$, so she hasn't completed $1 - \frac{3}{8} = \frac{5}{8}$ *[1 mark]*
$40\% \times \frac{5}{8} = 25\%$ *[1 mark]*

7. a is 4 parts of the ratio and c is 6 parts, so $a + c = 30$ means:
4 parts + 6 parts = 30 *[1 mark]*
$\Rightarrow$ 10 parts = 30
$\Rightarrow$ 1 part = 30 ÷ 10 = 3 *[1 mark]*
b is 5 parts of the ratio,
so $b = 5 \times 3 = 15$ *[1 mark]*

Test 15 — Pages 30–31

1. 1 tonne = 1000 kg,
so 3.5 tonnes = 3.5 × 1000
= 3500 kg *[1 mark]*

2. The graph of a direct proportion is a straight line through the origin, so the correct graph is:



[1 mark]

3. 90 : 210 = 9 : 21 = 3 : 7 *[1 mark]*

4. 1.35 pm to 3.15 pm
= 25 mins + 60 mins + 15 mins
= 100 mins *[1 mark]*
Taking away the advert breaks:
100 – (10 × 2) = 80 mins *[1 mark]*

5. 50% of 440 is 440 ÷ 2 = 220
and 5% is 220 ÷ 10 = 22
So 55% of 440 = 50% + 5%
= 220 + 22 = 242
[1 mark for a correct method, 1 mark for the correct answer]

6. 40% of 10 = 4 days
To get the job done in 1 day, you would need 6 × 10 = 60 people.
So to get it done in 4 days, you would need 60 ÷ 4 = 15 people.
[1 mark for a correct method, 1 mark for the correct answer]

7. 2 + 5 + 3 = 10, so 1 part of the ratio is 4 ÷ 10 = 0.4 kg *[1 mark]*
So the recipe requires:
5 × 0.4 = 2 kg of flour and
3 × 0.4 = 1.2 kg of butter *[1 mark]*
Flour will cost 2 × 50p = £1.
1.2 kg = 1200 g = 6 × 200 g,
so butter will cost 6 × £1 = £6.
So the total cost is £7 *[1 mark]*.

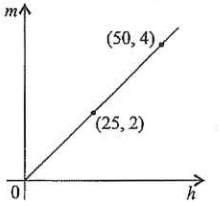
Test 16 — Pages 32–33

1. (12 ÷ 2) × 3 = 18 guinea pigs *[1 mark]*

2. For every 7 sweets, 2 are red.
So 7 – 2 = 5 aren't red.
So the ratio is 2 : 5 *[1 mark]*.

3. 1 m = 100 cm, so
1 m² = 100 cm × 100 cm = 10 000 cm²
and 7.91 m² = 79 100 cm² *[1 mark]*

4. E.g.



[1 mark for a straight line through the origin, 1 mark for two correct points marked where h : m is 25 : 2]

5. Sale price = 100% – 30%
= 70% *[1 mark]*
70% of £81 = £81 × 0.7
= £56.70 *[1 mark]*

6. Density = mass ÷ volume, so:
Density of granite = 22.1 ÷ 8.5
= 2.6 g/cm³
Density of sandstone = 14.1 ÷ 6.4
= 2.20... g/cm³
So the granite has a higher density.
[1 mark for at least one correct density, 1 mark for a correct conclusion drawn from two correctly calculated densities]

7. V and N are inversely proportional, so $V = \frac{k}{N}$. When $N = 850$, $V = £800$, so: $800 = \frac{k}{850}$ ***[1 mark]***
$\Rightarrow k = 800 \times 850 = 680\,000$ ***[1 mark]***
$\Rightarrow V = \frac{680\,000}{N}$. When $N = 340$,
$V = \frac{680\,000}{340} = £2000$ ***[1 mark]***

Test 17 — Pages 34–35

1. $v = \frac{k}{d}$ ***[1 mark]***
2. Mass = density × volume
= 1.05 × 390 = 409.5 g ***[1 mark]***
3. 60 mins × 24 hours × 7 days
= 10 080 minutes ***[1 mark]***
4. Hourly rate = £27 ÷ 6
= £4.50 per hour ***[1 mark]***
£40.50 ÷ £4.50 = 9 hours ***[1 mark]***
5. Percentage change
$= \frac{175 - 120}{120} \times 100$ ***[1 mark]***
$= \frac{55}{120} \times 100 = 0.458333... \times 100$
= 45.8333...% = 45.83% (2 d.p.)
[1 mark]
6. 14 + 5 = 19 parts, so 1 part
is 4.94 ÷ 19 = 0.26 litres ***[1 mark]***
Blue: 14 × 0.26 = 3.64 litres
Red: 5 × 0.26 = 1.3 litres
[1 mark for both]
7. Multiplier = 1 − 0.07 = 0.93
So population
= 71 500 × 0.93^n ***[1 mark]***,
where n is the number of years since the beginning of 2010.
At the beginning of 2020, $n = 10$, so population
= 71 500 × 0.93^{10} ***[1 mark]***
= 34 604.73...
= 34 600 (nearest 100) ***[1 mark]***

Test 18 — Pages 36–37

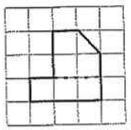
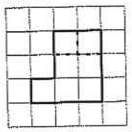
1. 8 mins + 4 hrs + 11 mins
= 4 hrs 19 mins ***[1 mark]***
2. 5% of £200 = 200 × 0.05 = £10
Final amount = £200 + (3 × 10)
= £230 ***[1 mark]***
3. Speed = $\frac{\text{distance}}{\text{time}} = \frac{120}{8} = 15$ m/s
[1 mark]
4. Area of A = 5 × 9 = 45 squares,
Area of B = 5 × 4 = 20 squares
[1 mark for both]
Ratio = 45 : 20 = 9 : 4 ***[1 mark]***
5. E.g. A small bag costs
£1.10 ÷ 0.6 = £1.833... per kg.
A large bag costs £2.00 per kg,
so the small bag is better value.
[1 mark for a correct method shown, 1 mark for the correct conclusion based on the working]
You could also find how much the large bag costs per 0.6 kg (it's £1.20).
6. 6 × 450 = 2700 cm³
1 litre = 1000 cm³,
so 2700 cm³ = 2.7 litres ***[1 mark]***
1 gallon ≈ 4.5 litres,
so 2.7 litres ≈ 2.7 ÷ 4.5
= 0.6 gallons ***[1 mark]***
7. Initial mass = 0.5 × 0.99^0 = 0.5 g
[1 mark]
After 7 days, mass = 0.5 × 0.99^7
= 0.46603... g ***[1 mark]***
So the substance has lost
0.5 − 0.46603... = 0.03396...
= 0.0340 g (3 s.f.) ***[1 mark]***

Test 19 — Pages 38–39

1. 150% of 40 = 1.5 × 40
= 60 ***[1 mark]***
2. 1 bar costs £1.60 ÷ 5 = 32p, so 8 bars costs 32p × 8 = £2.56 ***[1 mark]***
3. 13.5 ÷ 10³ = 13.5 ÷ 1000
= 0.0135 cm³ ***[1 mark]***
4. Number of parts female = 23 − 11
= 12 parts
8208 females means 1 part is
8208 ÷ 12 = 684 geckos
So there are 684 × 11
= 7524 male geckos
[1 mark for a correct method, 1 mark for the correct answer]
5. 104 467 ÷ (60 × 24) = 72.5465... days
= 72 days and (0.5465... × 24) hours
= 72 days and 13.11... hours
= 72 days and 13 hours (nearest hour)
[1 mark for a correct method, 1 mark for the correct answer]
6. Original value × 96.5% = £7720, so
original value = £7720 ÷ 0.965
= £8000
[1 mark for a correct method, 1 mark for the correct answer]
7. Pressure = force ÷ area
Area of A = 10 × 10 = 100 cm²,
so pressure when resting on A
= 10 ÷ 100 = 0.1 N/cm² ***[1 mark]***
Area of B = 4 × 4 = 16 cm²,
so pressure when resting on B
= 10 ÷ 16 = 0.625 N/cm² ***[1 mark]***
So difference in pressure
= 0.625 − 0.1 = 0.525 N/cm²
[1 mark]

Section Five: Shapes and Area

Test 20 — Pages 40–41

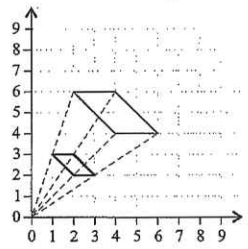
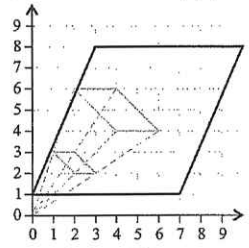
1. 5 ***[1 mark]***
2. 66° ***[1 mark]***
3. D ***[1 mark]***
4. Translation ***[1 mark]***
by the vector $\begin{pmatrix} 3 \\ -3 \end{pmatrix}$ ***[1 mark]***
Shape Y is shape X shifted three units right and 3 units down.
5. $r = 3 \div 2 = 1.5$ mm
So volume = $\pi r^2 \times 10$
$= \pi \times 1.5^2 \times 10$ ***[1 mark]*** = 70.685...
= 70.69 mm³ (2 d.p.) ***[1 mark]***
6. Front elevation:

[1 mark]
Plan:

[1 mark]

7. Area of trapezium
= ½ × (6 + 5) × 2 = 11 cm² ***[1 mark]***
Area of sector
= 11 ÷ 2 = 5.5 cm² ***[1 mark]***
Area of sector = $\frac{55°}{360°}$ × area of circle
So area of circle
= 5.5 ÷ $\frac{55°}{360°}$ = 36 cm² ***[1 mark]***

Test 21 — Pages 42–43

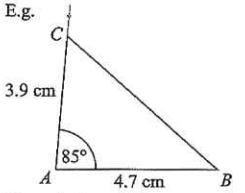
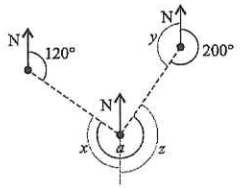
1. $x + y + x + y = 2(x + y)$ cm ***[1 mark]***
2. Rectangle ***[1 mark]***
3. Cone ***[1 mark]***
4. $x = 1$ ***[1 mark]***
5. E.g. The longest side of the triangle on the left measures 4 cm but the longest side of the triangle on the right measures 4.5 cm. Each corresponding pair of sides should be the same length in congruent triangles (by SSS), so they're not congruent.
[2 marks for a fully correct argument, otherwise 1 mark for taking a measurement from each triangle]
You could also measure the angles and show that AAS (two angles and a corresponding side) or SAS (two sides and the angle between them) don't hold.
6. Volume of tank
= ⅓ × π × 30³ = 36 000π cm³ ***[1 mark]***
1 litre per second
= 1000 cm³ per second
36 000π ÷ 1000 ***[1 mark]***
= 113.097... = 113 seconds
(to the nearest second) ***[1 mark]***
7. Surface area of one triangular face
= ½ × 6 × 5.2 = 15.6 cm² ***[1 mark]***
Surface area of one rectangular side of prism = 15 × 6 = 90 cm² ***[1 mark]***
The base of the pyramid is the same triangle as those in the tetrahedron.
Surface area of solid
= (4 × 15.6) + (3 × 90)
= 332.4 cm² ***[1 mark]***

Test 22 — Pages 44–45

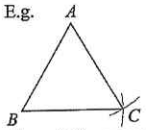
1. rhombus ***[1 mark]***
2. Surface area of one face = 2² = 4 cm²
Surface area of cube
= 6 × 4 = 24 cm² ***[1 mark]***
3. 480 ÷ 8 = 60 mm ***[1 mark]***
This is only true because the octagon is regular (so all its sides are equal).
4. Circumference of full circle
= 2πr = 2π × 5 = 10π m ***[1 mark]***
Angle of major sector
= 360° − 95° = 265°
$L = \frac{265°}{360°} \times 10\pi = 23.125...$
= 23.1 m (3 s.f.) ***[1 mark]***
You could calculate the length of the minor arc using $^{95}/_{360°} \times 10\pi = 8.290...$ and then subtract this from 10π.
5. 
[1 mark for drawing the shape the correct size, 1 mark for drawing the shape in the correct position]
6. Area = base × height, so
height = 49 ÷ 7 = 7 units.
So a vertex must be at (3, 8).

[2 marks for a fully correct diagram, otherwise 1 mark for a parallelogram with height 7 units]
7. Height of K: 1 part = 4 cm
so 3 parts = 4 × 3 = 12 cm ***[1 mark]***
Base radius: 1 part = 3 cm
so 3 parts = 3 × 3 = 9 cm ***[1 mark]***
Volume of K = ⅓ × π × 9² × 12
= 324π cm³ ***[1 mark]***

Section Six: Angles and Geometry

Test 23 — Pages 46–47

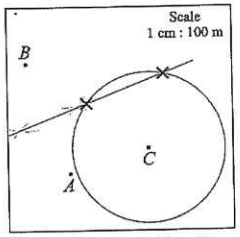
1. $x = 180° - (20° + 90° + 30°)$
$= 180° - 140° = 40°$ ***[1 mark]***
2. tan 60° = $\sqrt{3}$ ***[1 mark]***
3. Exterior angle = $\frac{360°}{n}$, so
$n = \frac{360°}{10°} = 36$ sides ***[1 mark]***
4. E.g.

[2 marks for a fully correct triangle, otherwise 1 mark for a triangle with an 85° angle or a triangle with sides of length 3.9 cm and 4.7 cm]
You can check that your triangle is correct by measuring the length of BC — it should be around 5.8 cm, but anywhere between 5.6 and 6 cm is fine.
5. $BD^2 = AB^2 + AD^2 = 7^2 + 4^2$
$= 49 + 16 = 65$
So $BD = \sqrt{65}$ cm
[1 mark for a correct method, 1 mark for the correct answer]
6. $\overrightarrow{RT} = \overrightarrow{RS} + \overrightarrow{ST} = \overrightarrow{RS} - \overrightarrow{TS}$
$= (2\mathbf{a} + 3\mathbf{b}) - (\mathbf{b} - 4\mathbf{a})$ ***[1 mark]***
$= 6\mathbf{a} + 2\mathbf{b}$ ***[1 mark]***
7. 
$x = 120°$ *(alternate angles)* ***[1 mark]***
$y = 360° - 200 = 160°$
$z = y = 160°$ *(alternate angles)* ***[1 mark]***
$a = x + z = 120° + 160°$
$= 280°$ ***[1 mark]***
There are other ways to approach this question. So long as you show all your working and get $a = 280°$, you'll pick up the marks.

Test 24 — Pages 48–49

1. Exterior angle $= \frac{360°}{n}$
$= \frac{360°}{6} = 60°$ ***[1 mark]***
2. The diagram measures 4 cm, so the height of the column is $4 \times 250 = 1000$ cm $= 10$ m ***[1 mark]***
3. $\cos x = \frac{\text{adjacent}}{\text{hypotenuse}}$, so
$\cos 20° = \frac{b}{a}$ ***[1 mark]***
4. Extend your compasses to the length of AB, place at B and draw an arc. Then place at A and draw an arc. C is where the two arcs meet.
E.g. 

[1 mark for a correct method, 1 mark for a correctly constructed triangle with all sides the same length]
You could do this question in different ways (e.g. constructing 60° angles at A and B) so your construction lines might look slightly different.
5. $100° + (10x - 60)° + (5x + 20)°$
$= 360°$ ***[1 mark]***
$\Rightarrow 60° + (15x)° = 360°$
$\Rightarrow 15x = 300 \Rightarrow x = 20$ ***[1 mark]***
6. Distance$^2 = 3.9^2 + 5.2^2$
$= 15.21 + 27.04 = 42.25$
So distance $= \sqrt{42.25} = 6.5$ km
[1 mark for a correct method, 1 mark for the correct answer]
7. ABE is a straight line, so angle CBE
$= 180° - 125° = 55°$ ***[1 mark]***
Since $ABCD$ is a trapezium, AD and BC are parallel, so ADE and BCE are corresponding angles, i.e. angle $BCE = 80°$ ***[1 mark]***
Angles in a triangle add up to 180°, so $x = 180° - 55° - 80° = 45°$ ***[1 mark]***

Test 25 — Pages 50–51

1. alternate ***[1 mark]***
2. $\mathbf{b} - \mathbf{a} = \begin{pmatrix} 2 \\ -3 \end{pmatrix} - \begin{pmatrix} 3 \\ 1 \end{pmatrix}$
$= \begin{pmatrix} 2-3 \\ -3-1 \end{pmatrix} = \begin{pmatrix} -1 \\ -4 \end{pmatrix}$ ***[1 mark]***
3. 5 km $= 500\,000$ cm
So the ratio is 10 cm : 500 000 cm
$= 1 : 50\,000$ ***[1 mark]***
4. The triangle is isosceles, so the bottom angles are both 65° ***[1 mark]***
The top angle is equal to x as they are vertically opposite, so $x = 180° - 65° - 65° = 50°$ ***[1 mark]***
5. $\sin x = \frac{\text{opposite}}{\text{hypotenuse}} = \frac{4}{7}$ ***[1 mark]***
So $x = \sin^{-1}\left(\frac{4}{7}\right) = 34.8499...°$
$= 35°$ (nearest whole degree) ***[1 mark]***
6. The external angles of a regular octagon are $\frac{360°}{8} = 45°$.
The angle x is equal to the external angle of the left octagon plus the external angle of the right octagon, i.e. $x = 45° + 45° = 90°$
[1 mark for a correct statement about the angles of a regular octagon, 1 mark for a correct conclusion]
You could also work out the interior angles of a regular octagon and subtract two of these from 360° (as they are angles around a point).
7. 

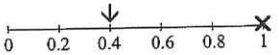
[1 mark for constructing the perpendicular bisector of A and B, 1 mark for constructing a circle of radius 2 cm around C, 1 mark for two correct points of intersection]

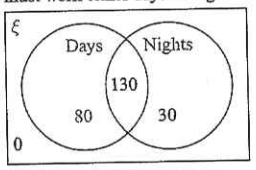
Section Seven: Probability and Statistics

Test 26 — Pages 52–53

1. $30 + 10 + 50 = 90$ ***[1 mark]***
2. $1 - 0.2 = 0.8$ ***[1 mark]***
3. Total number of children
$= 2 + 11 + 14 + 3 + 3 + 2 = 35$
Number of children who missed more than three days $= 3 + 2 = 5$
So $\frac{5}{35} = \frac{1}{7}$ of the children ***[1 mark]***.
4. $6 - 0 = 6$ days ***[1 mark]***
The maximum number of days is 6 since 0 children missed 7 or 8 days.
5. P(2 heads) $= 0.5 \times 0.5 = 0.25$ ***[1 mark]***
$0.25 \times 40 = 10$ times ***[1 mark]***
6. Total number of animals
$= 38 + 42 = 80$ ***[1 mark]***
Number of male otters $= 42 - 24 = 18$
Number of female penguins $= 12$
So total number
$= 12 + 18 = 30$ ***[1 mark]***
$\Rightarrow$ probability $= \frac{30}{80} = 0.375$ ***[1 mark]***
7. Mid-interval values (x): 5, 15, 25, 35
Frequencies × mid-intervals (fx):
30, 180, 500, 420
Sum of $fx = 1130$
Sum of $f = 50$
Mean $= \frac{1130}{50} = 22.6$ g
[1 mark for all values of x correct, 1 mark for all values of fx correct, 1 mark for the correct answer]

Test 27 — Pages 54–55

1. strong positive ***[1 mark]***
2. 

3. ***[1 mark for an arrow at 0.4] [1 mark for a cross at 1]***
4. 2013: 425 000
2017: 125 000
$425\,000 - 125\,000 = 300\,000$
[1 mark for reading off one of the values correctly, 1 mark for the correct final answer]
5. There are 27 values so the median is the $(27 + 1) \div 2 = 14$th value: 42.
54 appears 3 times, which is more than any other value. So the mode is 54.
The difference is $54 - 42 = 12$.
[2 marks for the correct answer, otherwise 1 mark for correctly finding either the median or the mode]
6. n(nights) $= \frac{1}{8} \times 240 = 30$
n(day or nights) $= 240 - 80 - 30 = 130$
n(neither) $= 0$ since all the taxi drivers must work either days or night


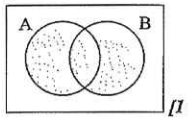
[2 marks for all three correct, otherwise 1 mark for two correct]

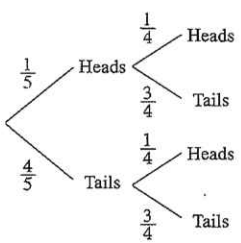
7.

×	1	2	3	4
1	1	2	3	4
2	2	4	6	8
3	3	6	9	12
4	4	8	12	16

[2 marks for all correct, otherwise 1 mark for at least seven correct]
The square numbers in the diagram are 1, 4, 9, 16. So 6 out of 16 possible outcomes are square numbers:
P(square) $= \frac{6}{16} = \frac{3}{8}$ ***[1 mark]***

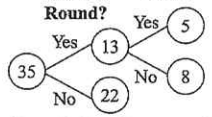
Test 28 — Pages 56–57

1. 100 000 ***[1 mark]*** *Larger samples give more reliable results.*
2. 

[1 mark]
3. Right-handed girls: $27 - 7 = 20$
Grand total: $19 + 27 = 46$
[1 mark for both correct]
You could do 34 − 14 = 20 and/or 12 + 34 = 46 instead.
4. P(Yellow) $= 1 - 0.28 - 0.21 - 0.24$
$= 0.27$ ***[1 mark]***
Red has the greatest probability and so is the most likely. ***[1 mark]***
5. P(coin 1 tails) $= 1 - \frac{1}{5} = \frac{4}{5}$
P(coin 2 tails) $= 1 - \frac{1}{4} = \frac{3}{4}$
The coin tosses are independent so the pairs of branches for coin 2 will be the same (i.e. they don't depend on the result of coin 1).


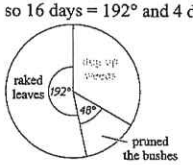
[1 mark for ⅕, 1 mark for ¼ and both instances of ¾]
6. Read up from 1000 m to the line of best fit and then across to 12.5 °C ***[1 mark]***.
The answer should be reliable because it's within the range of the known data. ***[1 mark]***
7. List the numbers in order:
2, 4, 9, 16, ▩
So the median is 9 ***[1 mark]***.
Mean = median + 1 = 10
So, total $= 10 \times 5 = 50$ ***[1 mark]***
▩ $= 50 - 16 - 9 - 4 - 2 = 19$ ***[1 mark]***

Test 29 — Pages 58–59

1. 0.0002 ***[1 mark]***
A coin landing on its edge is incredibly unlikely, so you're looking for a positive number that's really close to 0.
2. This isn't enough information to know. ***[1 mark]*** *E.g. if all the numbers in the list were 5 then adding 10 wouldn't change the median. But if only one was 5 then it would.*
3. $\frac{2}{4} = \frac{1}{2}$ or 0.5 ***[1 mark]***
4. 16 children = 2 circles
So 8 children = 1 circle ***[1 mark]***
Total circles $= 2 + 1\frac{1}{2} + 2\frac{3}{4} + 2$
$= 8\frac{1}{4}$
$8\frac{1}{4} \times 8 = 66$ children ***[1 mark]***
5. 13 get through to the second round, so $35 - 13 = 22$ don't get through.
5 of those who get through win a prize, so $13 - 5 = 8$ don't win a prize.


[2 marks for all correct, otherwise 1 mark for at least three correct]
6. P(not late) $= 1 - 0.4 = 0.6$ ***[1 mark]***
P(not late twice) $= 0.6 \times 0.6$
$= 0.36$ ***[1 mark]***
7. Gloria raked leaves or pruned the bushes on $30 - 10 = 20$ days. Let p be the number of days spent pruning. Then the number of days spent raking is $4p$: $p + 4p = 20 \Rightarrow p = 4$
So 4 days pruning and 16 days raking:

Activity	Number of days
dug up weeds	10
raked leaves	16
pruned the brushes	4

1 day corresponds to $360° \div 30 = 12°$
so 16 days $= 192°$ and 4 days $= 48°$.


[1 mark for a correct method to find the number of days, 1 mark for a correct method to find the angles, 1 mark for the correct table and pie chart]

Section Eight: Mixed Practice

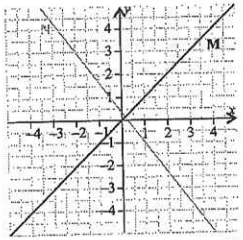
Test 30 — Pages 60–61

1. $a(b + 3) = (a \times b) + (a \times 3)$
$= ab + 3a$ ***[1 mark]***
2. $\frac{4.1^2}{\sqrt{9.05 + 7.009}} \approx \frac{4^2}{\sqrt{9 + 7}} = \frac{4^2}{\sqrt{16}}$
$= \frac{16}{4} = 4$ ***[1 mark]***
3. 8 : 7 ***[1 mark]***
4. E.g. The probability will be biased since it was a rainy day when she collected the data.
[1 mark for a sensible reason]
5. $8.1 \times 10^{15} = 0.81 \times 10^{16}$ ***[1 mark]***
So $(8.1 \times 10^{15}) + (9.0 \times 10^{16})$
$= (0.81 + 9.0) \times 10^{16}$
$= 9.81 \times 10^{16}$ ***[1 mark]***
6. Surface area $= 40\pi$ mm^2
$= \pi r^2 + \pi r l$ ***[1 mark]***
$= \pi \times 4^2 + \pi \times 4l$
$= \pi(16 + 4l)$
So $40 = 16 + 4l$ ***[1 mark]***
$\Rightarrow 4l = 24 \Rightarrow l = 6$ mm ***[1 mark]***
7. Since Aaliyah receives three times Ellis's amount, $a + b = 3a$, so $b = 2a$
$b = £80$, so $a = £80 \div 2 = £40$.
Then $x = a + b + (a + b)$
$= £40 + £80 + (£40 + £80) = £240$
[1 mark for finding b in terms of a, 1 mark for finding a, 1 mark for finding x]

Test 31 — Pages 62–63

1. $5^2 = 25$, $2^4 = 16$, $3^3 = 27$, $17^1 = 17$
So 3^3 is the largest *[1 mark]*.

2. segment *[1 mark]*

3. 

[1 mark]

4. Choose two points,
e.g. (–2, 3) and (1, –1).
Gradient $= \frac{\text{change in } y}{\text{change in } x}$
$= \frac{3-(-1)}{-2-1}$ *[1 mark]*
$= -\frac{4}{3}$ *[1 mark]*

5. $\frac{2x}{x^2} - x = 3x \Rightarrow \frac{2}{x} = 4x$ *[1 mark]*
$\Rightarrow 2 = 4x^2 \Rightarrow x^2 = \frac{2}{4} = \frac{1}{2}$ *[1 mark]*

6. $m = kv \Rightarrow k = m \div v$
$= 2740 \div 2000$ *[1 mark]*
$2740 \div 2 = 1370$, so
$2740 \div 2000 = 1.37$
$\Rightarrow m = 1.37v$ *[1 mark]*

7. Half of 112 = 56 towns.
$\frac{2}{7}$ of 56 = 16 *[1 mark]*
$\frac{3}{8}$ of 56 = 21 *[1 mark]*
16 + 21 = 37 coastal towns
So the answer is $\frac{37}{112}$ *[1 mark]*.

Test 32 — Pages 64–65

1. 0 *[1 mark]* *There was only one toffee to start with, so it's impossible to choose two from the bag.*

2. Multiplier is 1 – 0.12 = 0.88, so it will be 0.88x *[1 mark]*.

3. $a + 12 = 16$, so $a = 4$ *[1 mark]*

4. The actual data values are:
0, 0, 2, 3, 3, 3, 4, 5, 5, 5.
The sum of these is 30 *[1 mark]*.
So the mean is 30 ÷ 10 = 3 *[1 mark]*

5. $\tan 25° = \frac{7}{AB}$ *[1 mark]*
$\Rightarrow AB = \frac{7}{\tan 25°} = 15.011...$ m
$= 15.01$ m (2 d.p.) *[1 mark]*

6. 10 stone = 10 × 14 = 140 pounds, so the total mass of the driver and the bus is 20 140 pounds *[1 mark]*.
20 140 pounds ÷ 2.2 ≈ 9154.545... kg
= 9150 kg (3 s.f.) *[1 mark]*

7. Supermarket: 400 tins $\Rightarrow$ 400 ÷ 30
= 13.3... crates. They buy full crates so 14 crates *[1 mark]*.
Market stall: 70% of 400
= 400 × 0.7 = 280
280 ÷ 30 = 9.33... crates. They buy full crates so 10 crates *[1 mark]*.
This leaves 52 – 14 – 10 = 28 crates
$\Rightarrow$ 28 × 30 = 840 tins *[1 mark]*

Test 33 — Pages 66–67

1. The cat travels back to the house when the graph slopes downwards. This is after 17.5 minutes *[1 mark]*.

2. Exterior angles, a, satisfy $360° \div n$ for some positive whole number n, so $360° \div a$ should be equal to a positive whole number.
$360 \div 105° = 3.42...$ so 105° is not a correct angle *[1 mark]*.

3. Rounding unit = 1 so half of rounding unit = 1 ÷ 2 = 0.5
311 – 0.5 = 310.5 km *[1 mark]*

4. Difference = 8 – 1 = 7 parts
7 parts = £35 *[1 mark]*
Lester gets £35 ÷ 7 = £5 *[1 mark]*

5. Median ☑
The mean would be affected by the outlier (78). *[1 mark]*
There is no mode (or every value is a mode) since all the values appear exactly once. *[1 mark]*

6. $340 = \frac{17(a+l)}{2} \Rightarrow 680 = 17(a+l)$
$\Rightarrow 40 = a + l \Rightarrow l = 40 - a$
[1 mark for substituting in the values correctly, 1 mark for the correct equation]

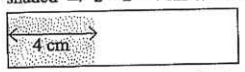
7. Using Pythagoras' theorem, the height of the triangle is
$= \sqrt{5^2 - 3^2} = 4$ cm *[1 mark]*
Height of the shaded region
$= 4 \div 2 = 2$ cm.
Top of the shaded region
$= 3 \div 2 = 1.5$ cm *[1 mark for both]*
Area of shaded region
$= \frac{1}{2} \times (3 + 1.5) \times 2$
$= 4.5$ cm^2 *[1 mark]*
Alternatively, you could work out the area of the two triangles and subtract.

Test 34 — Pages 68–69

1. 23:30 to 03:12
= 30 mins + 3 hours + 12 mins
= 3 hours 42 mins *[1 mark]*

2. $\begin{pmatrix}3\\-1\end{pmatrix} + \begin{pmatrix}3\\-1\end{pmatrix} = \begin{pmatrix}3+3\\-1+-1\end{pmatrix}$
$= \begin{pmatrix}6\\-2\end{pmatrix}$ *[1 mark]*

3. $4(3p - 2q)$ *[1 mark]*

4. 2 + 3 = 5 parts
The width is 10 cm and 10 ÷ 5 = 2
so 2 cm of width = 1 part
The ratio shows 2 parts should be shaded $\Rightarrow$ 2 × 2 = 4 cm of width


[1 mark for a correct method, 1 mark for the correct answer]
You could also shade down the rectangle instead of across — or shade any other region so long as the ratio is correct. The rectangle has a height of 4 cm so you'd need to shade an area of 16 cm^2.

5. $2(n+1) < 5n \Rightarrow 2n + 2 < 5n$ *[1 mark]*
$\Rightarrow 2 < 3n$
$\Rightarrow \frac{2}{3} < n$ or $n > \frac{2}{3}$ *[1 mark]*

6. 4×1.35^{10} *[1 mark]* = 80.426...
= 80.4 g (1 d.p.) *[1 mark]*

7. Number of sunny days
= 60 × 0.4 = 24 *[1 mark]*
Rainy : snowy = 5 : 1
There were 3 snowy days, so there were 5 × 3 = 15 rainy days *[1 mark]*
So there were 60 – (24 + 15 + 3)
= 60 – 42 = 18 cloudy days, so
P(cloudy) = $\frac{18}{60} = \frac{3}{10}$ or 0.3 *[1 mark]*
You could also work out the probabilities of it being sunny (0.4), snowy (0.05) or rainy (0.25) and then subtract these from 1.

MQFXP41_MXFXP41

Progress Chart

Here's a handy chart to stick your scores in, so you can keep track of how you're doing.

Number	Test 1	
	Test 2	
	Test 3	
	Test 4	
	Test 5	
	Test 6	
Algebra	Test 7	
	Test 8	
	Test 9	
	Test 10	
Graphs	Test 11	
	Test 12	
	Test 13	

Ratio, Proportion and Rates of Change	Test 14	
	Test 15	
	Test 16	
	Test 17	
	Test 18	
	Test 19	
Shapes and Area	Test 20	
	Test 21	
	Test 22	
Angles and Geometry	Test 23	
	Test 24	
	Test 25	

Probability and Statistics	Test 26	
	Test 27	
	Test 28	
	Test 29	
Mixed Practice	Test 30	
	Test 31	
	Test 32	
	Test 33	
	Test 34	

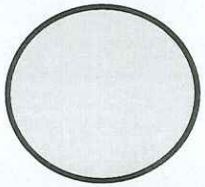
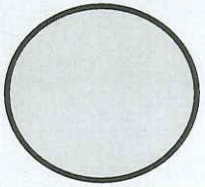
Some blindingly obvious advice:

- If a test didn't go too well, go away and revise that topic before you try the next test.
- Focus your revision on the topics you're struggling with — don't just do the stuff you find easiest!

0918 - 18031

1 Start with Confidence...

ACCESS MATHS

Round 34,565 to the nearest 1000.	How many minutes are in 4.5 hours?	Write 6.5459 correct to 2 decimal places	Draw a chord 
Write $\frac{3}{5}$ as a percentage	7 , 8 , 4 , 9 Write the largest 4 digit even number	Write in size order 4.25 , 4.02 , 4.205 , 4.2	Write 3.4556 correct to 3 significant figures
Draw a tangent 	Work out 1.6^2 	Work out 30% of £64	5 , 3 , 4 , 8 Write the smallest 4 digit odd number
There are 4 coloured pens in a box: red, blue, green and yellow. 2 are taken. Write all the possible combinations.	Write down the 19th odd number	Write in size order 4 , -2 , -4 , 2 , 0	$\frac{3}{5}$ of sweets are red and the rest are blue. Write the ratio blue to red.

Easter Revision Calendar

ACCESS MATHS

April

8 Write these numbers in size order:

-5, 0, 4, -7, 9

9 Write these numbers in size order:

0.51, 0.5, 0.501, 0.15

10 Round to 2 decimal places:

5.6565

11 Write this fraction as a percentage:

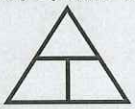
$\frac{3}{10}$

12 How many minutes in 7.5 hours?

13 Work out:

34 X £4.60

14 Write the speed, distance & time formula



15 Estimate

648 x 79p

16 Simplify:

100:120

17 Simplify:

$4x - 2y + 3x - 6y$

18 Work out:

$\frac{2}{7} + \frac{1}{5}$

19 Solve:

$6x + 2 = 5 - x$

20 Share £280 in the ratio 3:4

21 Expand:

$3x(4 - x)$

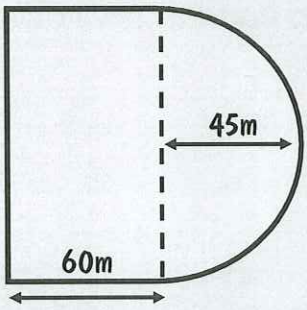
22 Expand and simplify:

$(2m + 3)(3m - 1)$

23 Change:

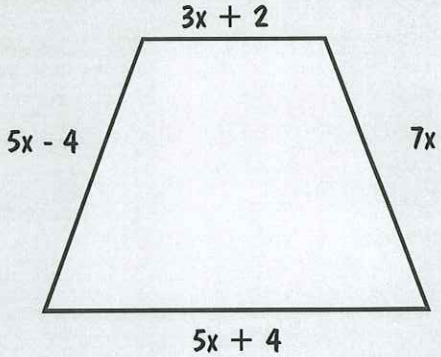
$25{,}000cm^3$ into m^3

?



Work out the perimeter of this rectangle and semicircle. The semi-circle has a radius of 45m.

?



Write an expression for the perimeter of this trapezium. What is the perimeter when x=3

And Get Ready For The Final Stretch!!

Find somewhere quiet to work!

Identify the topics you need to work on!

Practice in small chunks every day!

Ask for help if you are still unsure!

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