



JP Maths

Revision

GCSE MATHS

Knowledge Tests – Set 1

FOUNDATION TIER

TOPICS COVERED:



NUMBER



ALGEBRA



RATIO AND PROPORTION



GEOMETRY AND MEASURES



PROBABILITY



STATISTICS



GRAPHS



You've got this! ❤️



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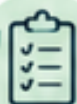
Attempt the paper
before watching the
solutions!

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FOUNDATION TIER

Number: Knowledge Test 1



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INFORMATION

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ADVICE

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You've got this! ❤️

Place Value and Decimals

★

□

★★

□

★★★

□

1. Put these numbers in ascending order:

1.8, 1.08, 1.808, 1.88

.....
(Total for Question 1 is 1 mark)

Adding and Subtracting Integers and Decimals

★

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2. Calculate $416.82 - 23.9$



.....
(Total for Question 2 is 2 marks)

Dividing Integers

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3. Calculate $204 \div 6$



.....
(Total for Question 3 is 2 marks)

Multiplying Integers

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4. Calculate 124×3



.....
(Total for Question 4 is 2 marks)

Multiplying Decimals

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5. Calculate 4.12×2.4



.....
(Total for Question 5 is 3 marks)

Order of Operations (BIDMAS)

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6. Write brackets () in this statement to make it correct.



$3 \times 6 + 9 = 45$

(Total for Question 6 is 1 mark)

Dividing Decimals

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7. Calculate $0.84 \div 0.7$



.....
(Total for Question 7 is 2 marks)

Rounding

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8. Round 18.764 to 3 significant figures

.....
(Total for Question 8 is 1 mark)

★

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9. Work out $\frac{7.8 + 5.3}{3.6 \times 2.4}$

Give your answer as a decimal.
Write down all the digits on your calculator display.

.....
(Total for Question 9 is 2 marks)

Estimation

★

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10. (a) A bag contains 9.78 kg of rice. Each serving uses 2.04 kg. Estimate how many servings can be made.



.....
(2)

(b) Is your answer to part (a) an overestimate or an underestimate? Give reason for your answer.

.....
.....
(1)

(Total for Question 10 is 3 marks)

Negative Numbers

★
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★★
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★★★
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11. Calculate $-5 \times -2 \times 3$



.....
(Total for Question 11 is 1 mark)

Factors and Multiples

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12. A number is a multiple of both 4 and 6.



Write down the smallest positive number.

.....
(Total for Question 12 is 2 marks)

Powers and Roots

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★★
□

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13. Which of the following are square numbers?



1, 12, 16, 18, 25, 30, 36

.....
(Total for Question 13 is 2 marks)

Ordering and Comparing Fractions, Decimals and Percentages

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14. Put these in ascending order.



74 %, 0.705, $\frac{3}{4}$, 0.76, 70.1 %

.....
(Total for Question 14 is 2 marks)

HCF and LCM

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15. Find the HCF and LCM of 84 and 210.

.....
(Total for Question 15 is 3 marks)

Working with Fractions

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16. Work out:



(a) $1\frac{1}{2} \times \frac{3}{4}$

Give your answer as a mixed number.

(b) $2\frac{1}{6} \div 1\frac{1}{3}$

Give your answer as a mixed number.

.....
(2)

.....
(2)
(Total for Question 16 is 4 marks)

★

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17. Work out:



(a) $3\frac{1}{4} + 1\frac{1}{2}$

Give your answer as a mixed number.

.....
(2)

(b) $5\frac{2}{3} - 2\frac{3}{4}$

Give your answer as a mixed number.

.....
(2)

(Total for Question 17 is 4 marks)

★

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18. A class has 30 students.



$\frac{3}{5}$ are girls.

$\frac{1}{3}$ of the girls wear glasses.

How many girls wear glasses?

.....
(Total for Question 18 is 2 marks)

Percentages of Amounts

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★★★
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19. A school has 1200 students.



35% travel by bus.

How many students travel by bus?

.....
(Total for Question 19 is 2 marks)

Reciprocals

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★★★
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20. Write down the reciprocal of $\frac{9}{10}$.

.....
(Total for Question 20 is 1 mark)

Reverse Percentages

★
□

★★
□

★★★
□

21. The price of a jacket is reduced by 20% in a sale.

The sale price is £68.

Work out the original price of the jacket.

.....
(Total for Question 21 is 2 marks)

★

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22. Holly invests £5000 in an account paying 3% compound interest each year.

Calculate the value of the investment after 2 years.

.....

(Total for Question 22 is 3 marks)

★

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23. A café buys ingredients costing £240.

It sells 180 meals at £2.20 each.

Work out the percentage profit.

.....

(Total for Question 23 is 3 marks)

★

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24. Simplify $20a^9b^5 \div 4a^2b$

.....
(Total for Question 24 is 2 marks)

Standard Form

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25. Calculate:



$(3.2 \times 10^5) \div (8 \times 10^{-2})$

Give your answer in standard form.

.....
(Total for Question 25 is 2 marks)

Error Intervals

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26. A mass, m , is measured as 42 kg to the nearest kilogram.

Write down the error interval for m .

$\leq m <$

.....
(Total for Question 26 is 2 marks)

Score:

I am confident with:

.....

.....

.....

I need to work on:

.....

.....

.....



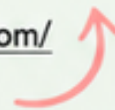
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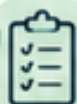
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FOUNDATION TIER

Algebra: Knowledge Test 1



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INFORMATION

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ADVICE

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.



You've got this! 

Writing Expressions

★

□

★★

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★★★

□

1. (a) The price of an apple is a pounds.
- Write down an expression for the price of 3 apples.

.....

(1)

- (b) The price of a banana is b pounds.
- The price of a carrot is c pounds.
- Write down an expression for the price of 3 bananas and 2 carrots.

.....

(1)

(Total for Question 1 is 2 marks)

Simplifying Expressions

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2. Simplify $x^2 + x^2$

.....

(Total for Question 2 is 1 mark)

Expanding Single Brackets

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3. Expand and simplify $7(x - 1) + 3(2x - 5)$

.....

(Total for Question 3 is 2 marks)

Expanding Double Brackets

★

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4. Expand and simplify $(4x - 1)(5x - 6)$

.....
(Total for Question 4 is 2 marks)

Factorising Single Brackets

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5. Factorise $6x^2 - 12x$

.....
(Total for Question 5 is 1 mark)

Factorising Quadratics (Monic)

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6. Factorise $x^2 - 5x + 6$

.....
(Total for Question 6 is 2 marks)

The Difference of Two Squares

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7. Factorise $x^2 - 100$

.....
(Total for Question 7 is 1 mark)

Changing the Subject (Basic)

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8. Make m the subject of $n = \frac{m}{3} + 8$

.....
(Total for Question 8 is 2 marks)

Substituting into Formulae

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9. $x = abc$



(a) Work out the value of x when $a = 4$, $b = -3$ and $c = -2$.

.....
(2)

$$v^2 = u^2 + 2as$$

(b) Work out the positive value of v when $u = 10$, $a = -2$ and $s = 9$

.....
(2)

(Total for Question 9 is 4 marks)

Solving Linear Equations

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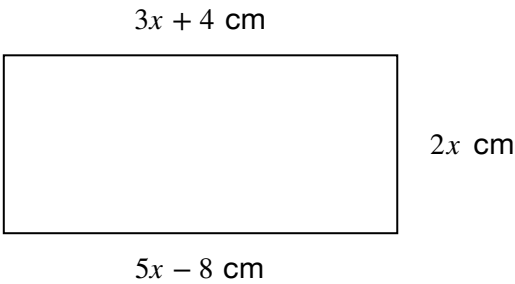
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10. Solve $\frac{x-3}{6} = 5$



.....
(Total for Question 10 is 2 marks)

11. Below is a rectangle.



Work out the area.

.....
(Total for Question 11 is 4 marks)

12. Solve $x^2 - 2x - 24 = 0$

.....
(Total for Question 12 is 2 marks)

Solving Linear Inequalities

★

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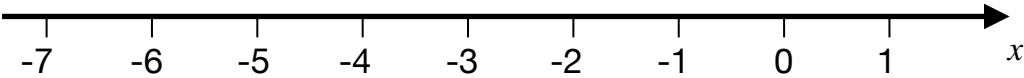
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13. On the number line, show the inequality $x \leq -2$.



(Total for Question 13 is 1 mark)

Solving Linear Inequalities

★

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14. Solve $\frac{x + 2}{3} \leq 5$



.....
(Total for Question 14 is 2 marks)

Solving Simultaneous Equations Algebraically

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15. Solve the simultaneous equations

$2x - 3y = 7$

$3x + 5y = 1$

.....
(Total for Question 15 is 4 marks)

16. Find the n th term of the following sequence.

12, 17, 22, 27...

.....

(Total for Question 16 is 2 marks)

Total for Test is 38 Marks

Score:

I am confident with:

.....

.....

.....

I need to work on:

.....

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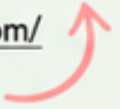
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Ratio and Proportion: Knowledge Test 1



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You've got this! ❤️

Ratio

1. A camping shop sells adult and children's sleeping bags.

★

★★

★★★

The ratio of adult sleeping bags sold to children's sleeping bags sold is 9 : 5.

The shop sells 99 adult sleeping bags.

How many children's sleeping bags are sold?



.....
(Total for Question 1 is 2 marks)

Best Buys

2. A café has two special offers on muffins.

★

★★

★★★

Offer A

6 muffins for £9.60

Offer B

Buy 2 muffins and get a third muffin free.

Each muffin normally costs £1.70.

Which offer is better value?

.....
(Total for Question 2 is 3 marks)

3. A recipe for soup serves 6 people.

Ingredients

480 g potatoes
360 g carrots
900 ml stock

Amira is cooking for 15 people.

Work out how much of each ingredient she needs.

potatoes:

carrots:

stock:

(Total for Question 3 is 3 marks)

4. A bucket contains 4 litres of water.

Lucy pours 1850 millilitres into some plant pots.

How much water is left in the bucket?

Give your answer in millilitres.

.....

(Total for Question 4 is 2 marks)

Speed, Distance, Time

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★★★

5. Sophie walks 15 km at an average speed of 5 km/h.
- She then cycles 24 km at an average speed of 16 km/h.
- Work out the total time Sophie spends travelling.
- Give your answer in hours and minutes.

.....

(Total for Question 5 is 3 marks)

Density, Mass, Volume

★

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★★★

6. A piece of stone has a mass of 84 g and a volume of 30 cm³.
- Work out the density of the stone.

g/cm³

.....

(Total for Question 6 is 2 marks)

Force, Pressure, Area

★

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★★★

7. A wooden crate exerts a force of 540 newtons on the floor.
- The area of the base touching the floor is 3 m².
- Work out the pressure on the floor.

N/m²

.....

(Total for Question 7 is 2 marks)

8. 8 workers can paint a school in 15 days.

How many days would 12 workers take?

.....
(Total for Question 8 is 2 marks)

Total for Test is 19 Marks

Score:

I am confident with:

.....

.....

.....

I need to work on:

.....

.....

.....



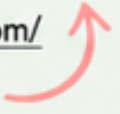
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FOUNDATION TIER

Geometry: Knowledge Test 1



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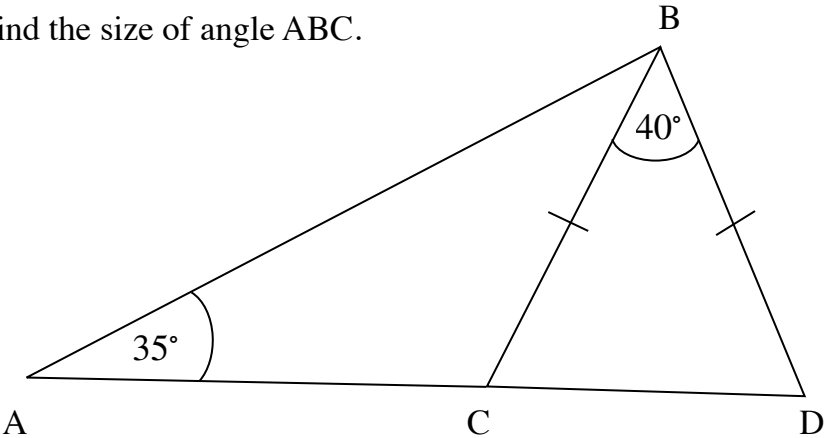


You've got this!

1. ACD is a straight line.

$BC = BD$.

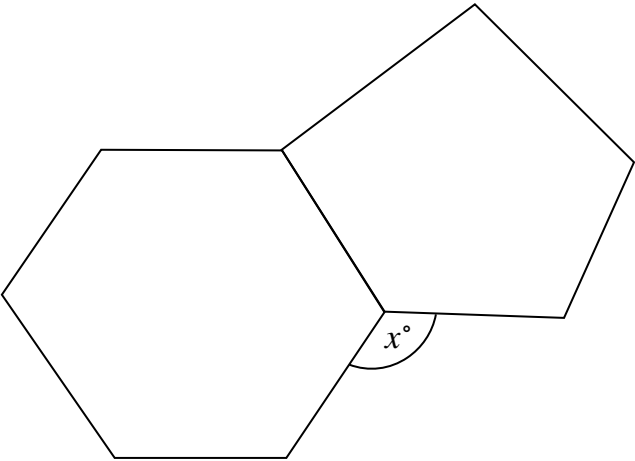
Find the size of angle ABC.



○

.....
(Total for Question 1 is 3 marks)

2. Below is a regular hexagon and a regular pentagon.

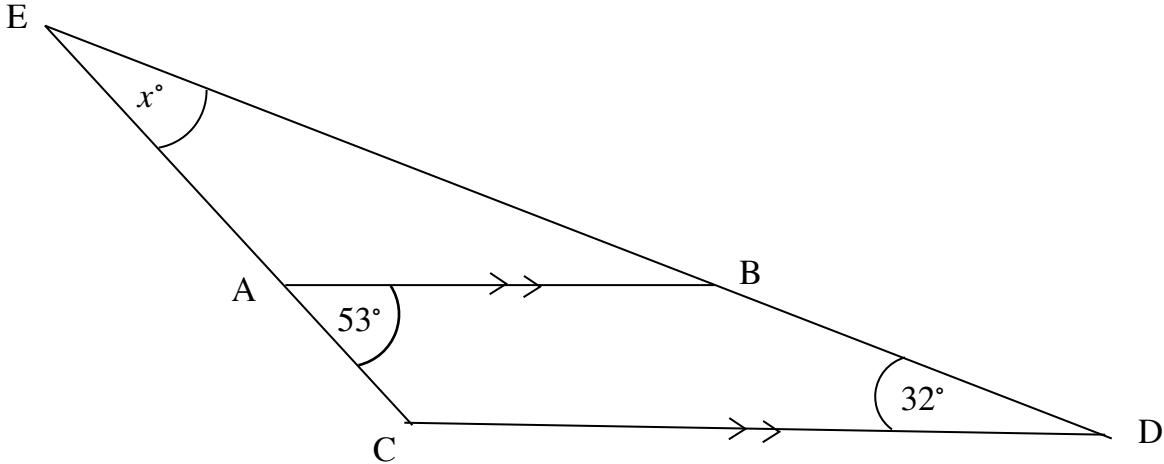


Work out the size of the angle marked x°

○

.....
(Total for Question 2 is 4 marks)

3. AB and CD are parallel lines.



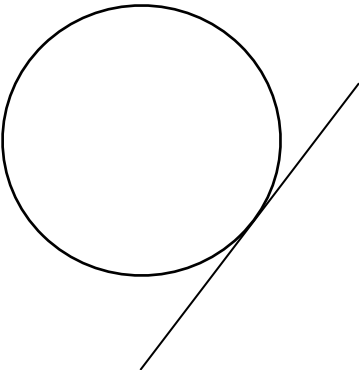
Work out the size of the angle AEB.

Give reasons for your answer.

o

(Total for Question 3 is 4 marks)

4. In the diagram, a straight line touches the circle at exactly one point.
Write down the mathematical name for the line.



(Total for Question 4 is 1 mark)

Bearings

5. The diagram shows the position of London.

★
□

★★
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★★★
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Oxford is 50 miles away from London on a bearing of 300° .

Mark the position of Oxford on the diagram.

Scale: 1cm represents 10 miles.



(Total for Question 5 is 2 marks)

Area and Circumference of Circles

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□

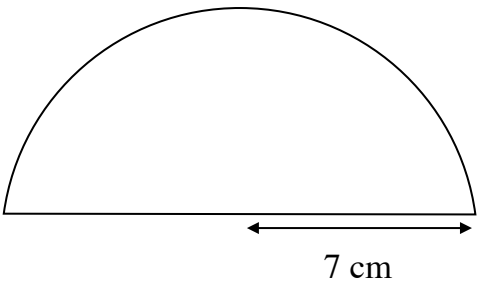
★★
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★★★
□

6. A semicircle has a radius of 7 cm.

Work out the area of the semicircle.

Give your answer to 3 significant figures.



.....cm²
(Total for Question 6 is 2 marks)

Congruent Triangles

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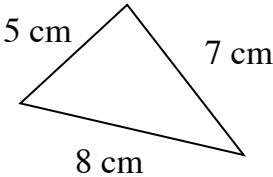
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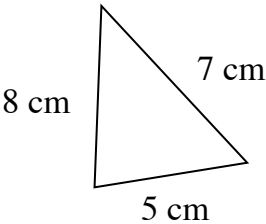
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7. Which two triangles are congruent?

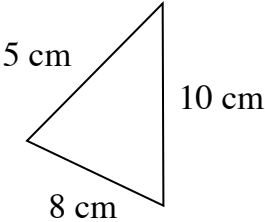
A



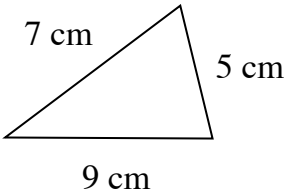
B



C



D



.....
(1)

Give reason for your answer.

.....
(1)

(Total for Question 7 is 2 marks)

Volume of Prisms

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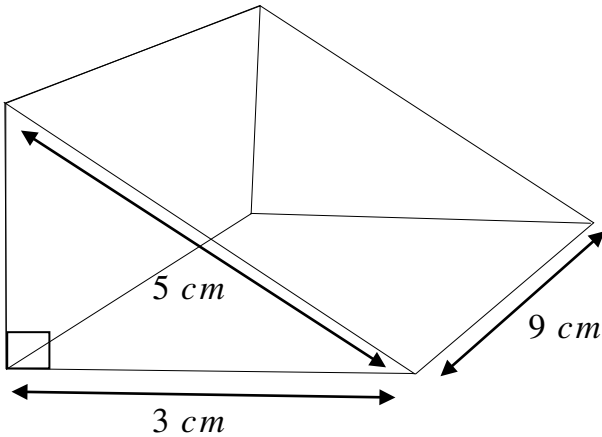
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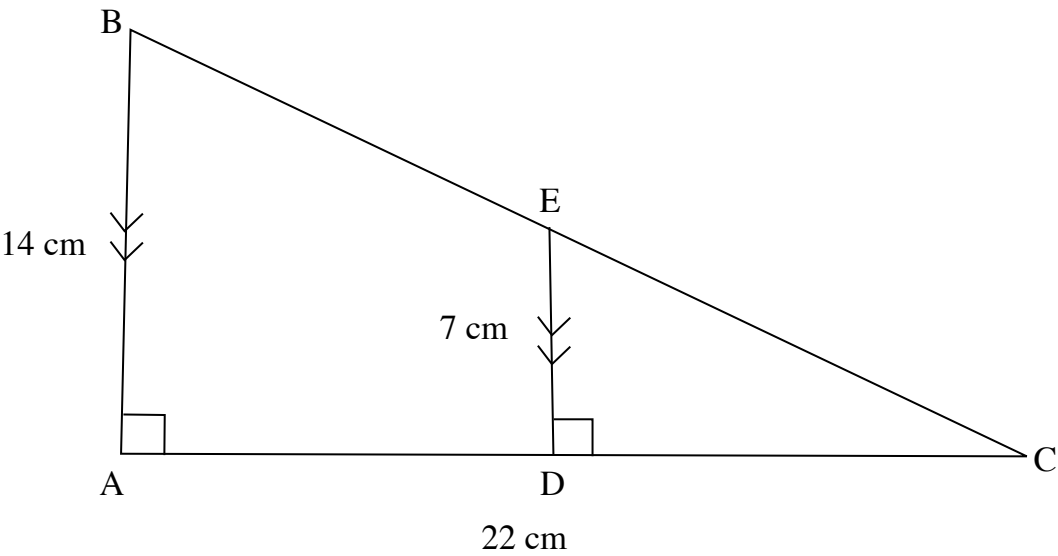
8. Work out the volume of the triangular prism below.



..... cm^3

(Total for Question 8 is 4 marks)

9. Triangles ABC and DEC are mathematically similar.



$AB = 14\text{ cm}$

$ED = 7\text{ cm}$

$AC = 22\text{ cm}$

(a) Find the length of AD

.....cm

(3)

(b) Find the length of CE

.....cm

(2)

(Total for Question 9 is 5 marks)

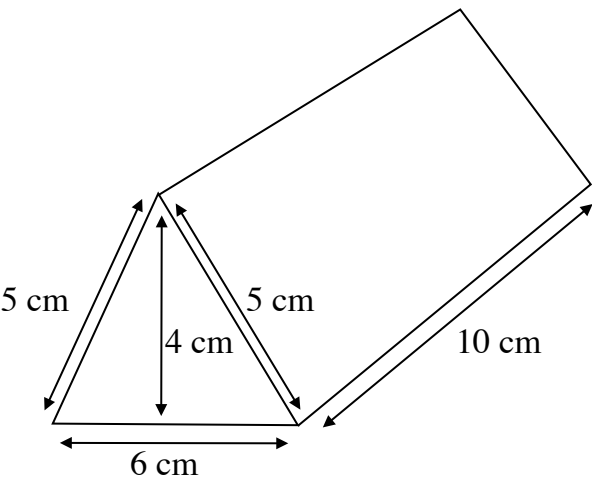
Surface Area

★
□

★★
□

★★★
□

10. A triangular prism has a base 6 cm and height 4 cm.
- The length of the prism is 10 cm.
- The other two sides of the triangle are both 5 cm.
- Work out the surface area.



cm²

(Total for Question 10 is 3 marks)

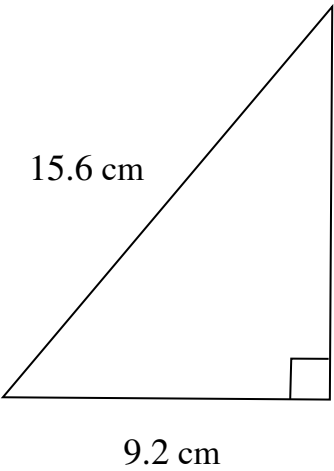
Pythagoras Theorem

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□

★★
□

★★★
□

11. A right-angled triangle has a hypotenuse of 15.6 cm and one other side of 9.2 cm.
- Calculate the missing side.
- Give your answer to 1 decimal place.

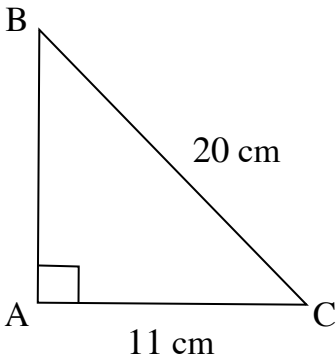


cm

(Total for Question 11 is 2 marks)

12. In a right-angled triangle, find the size of the angle ACB.

Give your answer correct to 3 significant figures.



.....

(Total for Question 12 is 2 marks)

Exact Trig Values

13. Write down the value of $\cos(30^\circ)$



.....

(Total for Question 13 is 1 mark)

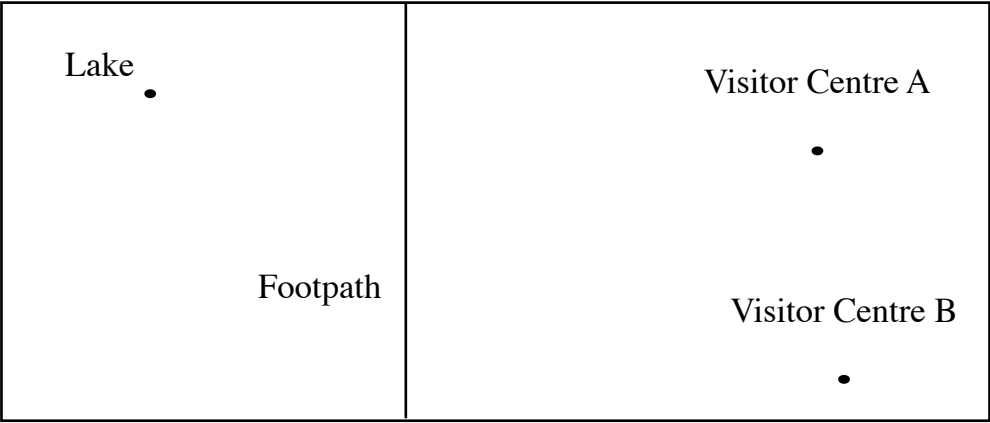
14. A wildlife observation hut is to be built.

It must be

- within 400 m of the lake
- at least 200 m from the footpath
- nearer to Visitor Centre A than Visitor Centre B.

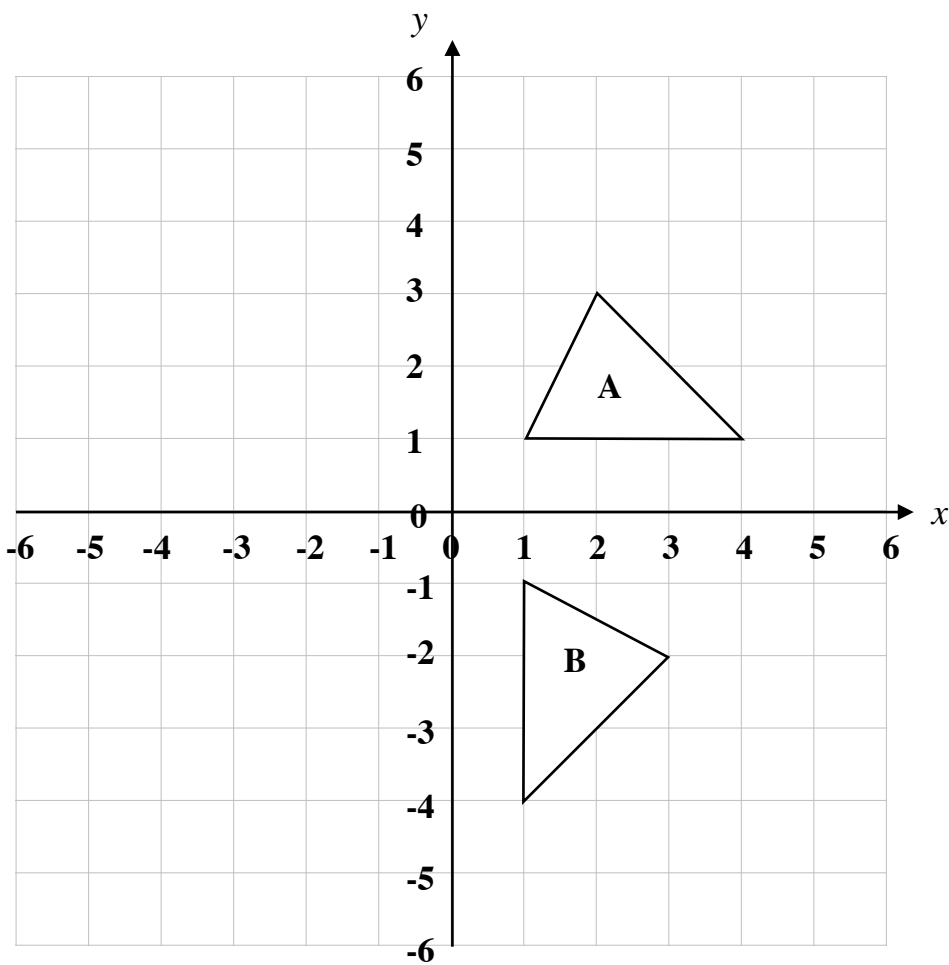
Shade the possible positions of the hut.

Use the scale 1 cm = 100 m.



(Total for Question 14 is 4 marks)

15. Shape **A** is transformed to shape **B**.



Describe fully the single transformation that maps shape **A** onto shape **B**.

.....

.....

.....

16.

$$\mathbf{a} = \begin{pmatrix} 4 \\ -6 \end{pmatrix}, \quad \mathbf{b} = \begin{pmatrix} 2 \\ -5 \end{pmatrix}$$

a. Find $2\mathbf{a}$

b. Find $-\mathbf{b}$

c. Find $2\mathbf{a} + \mathbf{b}$

.....

(2)

.....

(2)

.....

(2)

(Total for Question 16 is 6 marks)

Score:

I am confident with:

.....

.....

.....

I need to work on:

.....

.....

.....



JP Maths

Revision



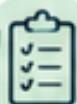
Attempt the paper
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FOUNDATION TIER

Probability: Knowledge Test 1



INSTRUCTIONS

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- You must **show all your working.**
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- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.



INFORMATION

- The marks for **each** question are shown in brackets– *use this as a guide as to how much time to spend on each question.*



ADVICE

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.



You've got this!

1. The probability that a light bulb lasts more than 1 year is 0.75.

A shop sells 120 light bulbs.

Work out an estimate for the number of bulbs that will last more than 1 year.

.....
(Total for Question 1 is 2 marks)

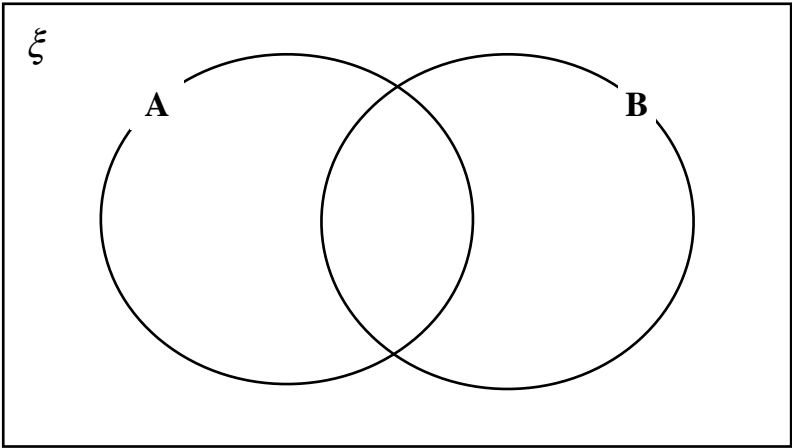
Venn diagrams

2. Let $\xi = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$

A = Factors of 12

B = Multiples of 3

(a) Complete the Venn diagram.



(3)

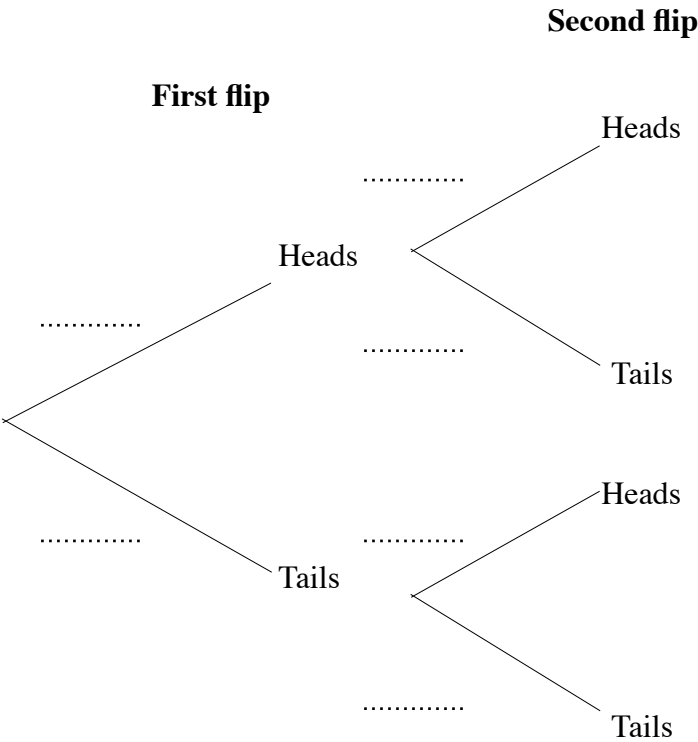
(b) Write down $P(A \cap B)$

.....
(1)

(Total for Question 2 is 4 marks)

3. A fair coin is flipped twice.

(a) Complete the probability tree diagram



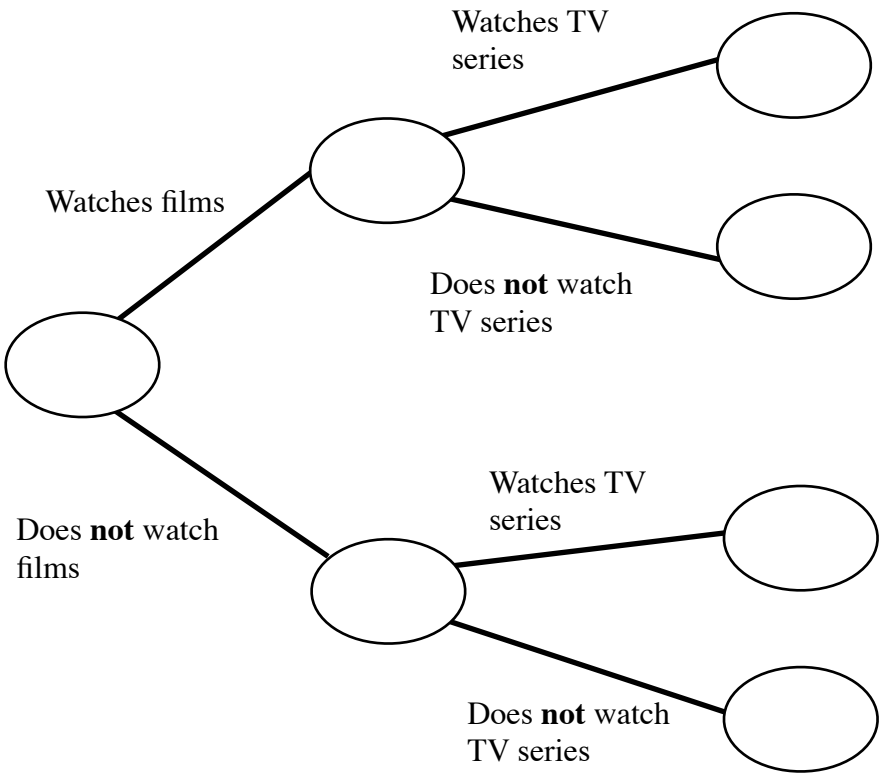
(2)

(b) Find the probability of getting exactly one head.

.....
(3)

(Total for Question 3 is 5 marks)

4. 60 people were asked whether they watch films and whether they watch TV series.
- 42 of the people watch films.
- Of the people who watch films, 30 also watch TV series.
- Of the people who do not watch films, 12 watch TV series.
- (a) Complete the frequency tree.



(3)

- (b) Find the probability that a randomly selected person watches films.

.....
(1)

- (c) Find the probability that a person watches TV series.

.....
(1)

5. 160 people visited a supermarket. Each person is either a member or a non-member, and each person chose one type of payment: cash, card or mobile pay.
- 90 people are members.
- 70 people paid by card.
- 40 people paid by cash.
- 30 members paid by cash.
- 30 members paid by card.
- 20 non-members used mobile pay.

	Cash	Card	Mobile Pay	Total
Member				
Non-member				
Total				

Complete the two way table

(3)

(Total for Question 5 is 3 marks)

6. A fair coin is flipped and a fair six-sided dice is rolled.
- List all the possible outcomes.

(Total for Question 6 is 2 marks)

Score:

I am confident with:

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I need to work on:

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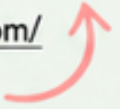
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FOUNDATION TIER

Statistics: Knowledge Test 1



INSTRUCTIONS

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ADVICE

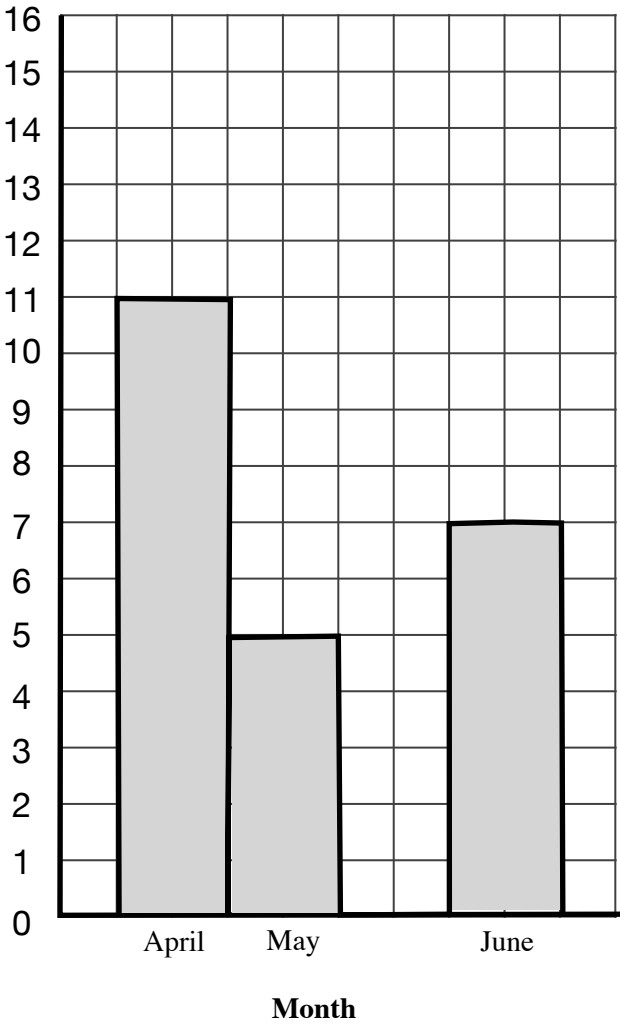
- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.



You've got this! 

1. The bar chart shows information about the number of days it rained in April, May and June.

Month	Frequency
April	11
May	6
June	7



Write down **three** things that are wrong with the bar chart.

.....

.....

.....

.....

2. A student was asked to draw a frequency polygon for the table below.

Time, t	Frequency
$0 < t \leq 10$	5
$10 < t \leq 20$	9
$20 < t \leq 30$	12
$30 < t \leq 40$	8
$40 < t \leq 50$	4



Write down two mistakes the student has made.

1.
.....
.....
.....
2.
.....
.....
.....

3. The pictogram shows information about the amount of milk sold in a shop on Monday.

Skimmed	□ □ □ □
Semi skimmed	□ □
Whole	□ □ □
Other	

Key:

80 cartons of semi skimmed milk were sold on Monday.

(a) Complete the key

(1)

400 cartons were sold in total.

(b) Use this information to complete the pictogram

(2)

(c) What fraction of the total milk sold on Monday was whole milk?

.....

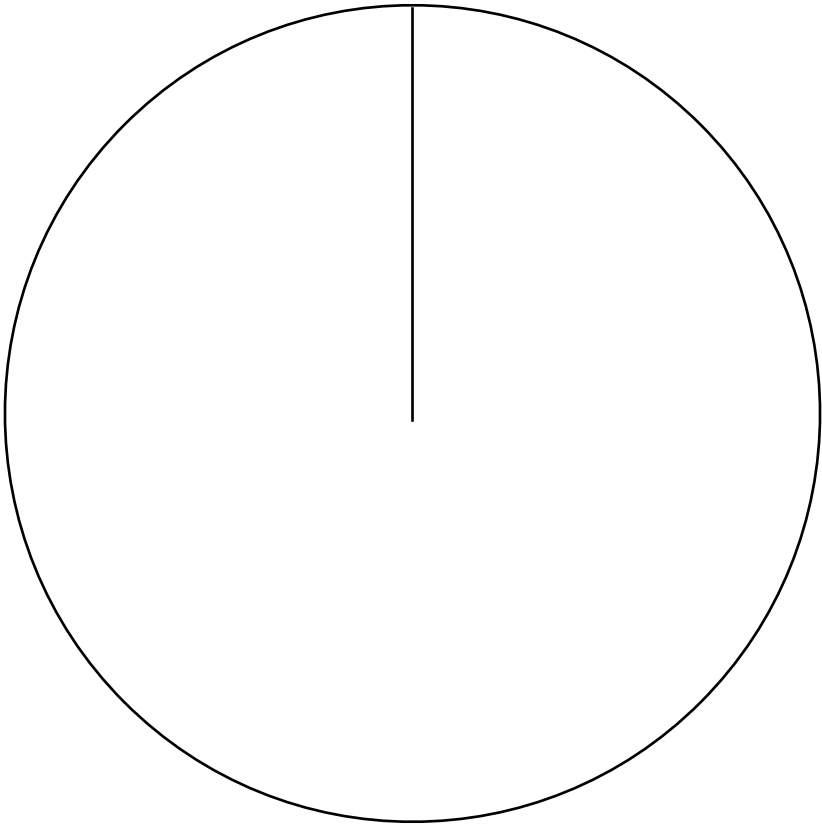
(2)

(Total for Question 3 is 5 marks)

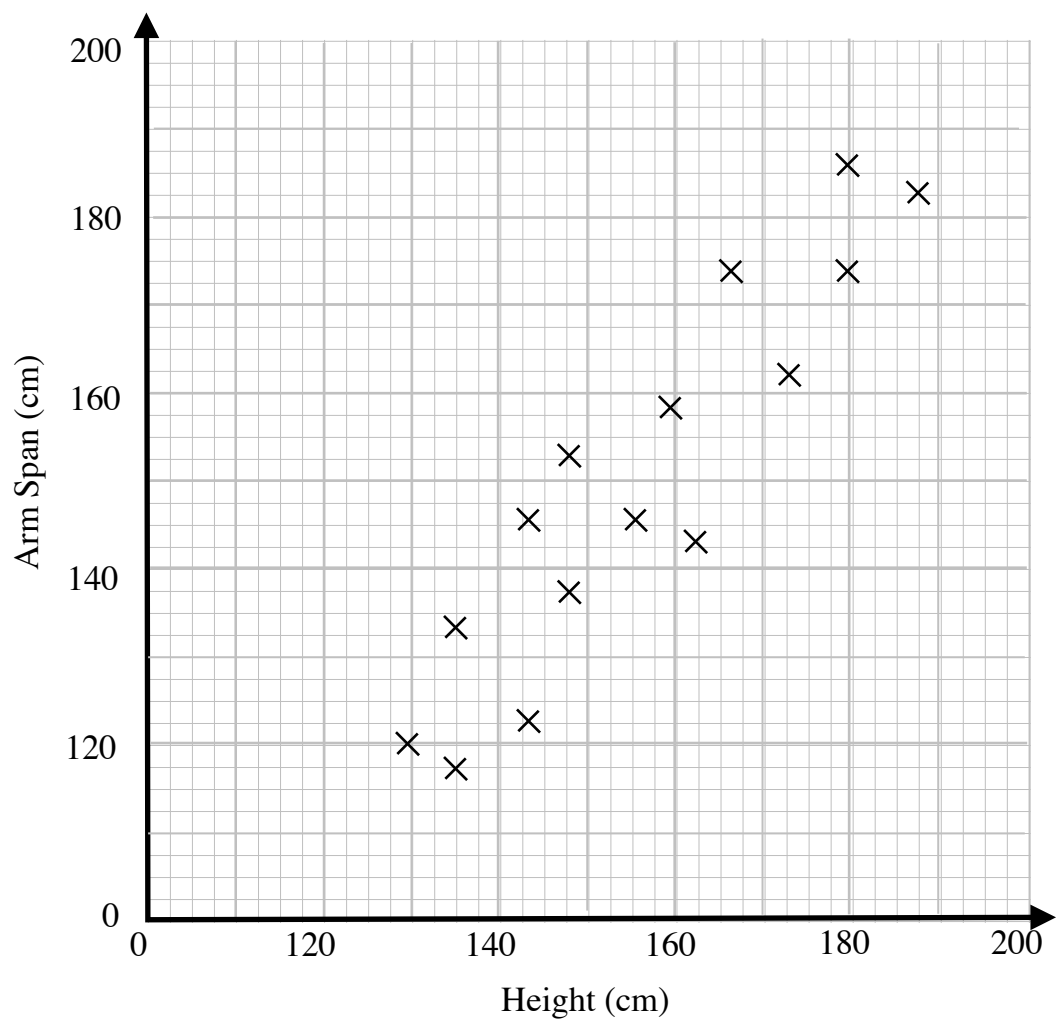
4. The table shows the favourite pets of 30 students.

Pet	Frequency
Dog	12
Cat	9
Rabbit	6
Fish	3

Draw an accurate pie chart for this information



5. The scatter graph shows the relationship between a person's height and arm span.



(a) Write down the correlation.

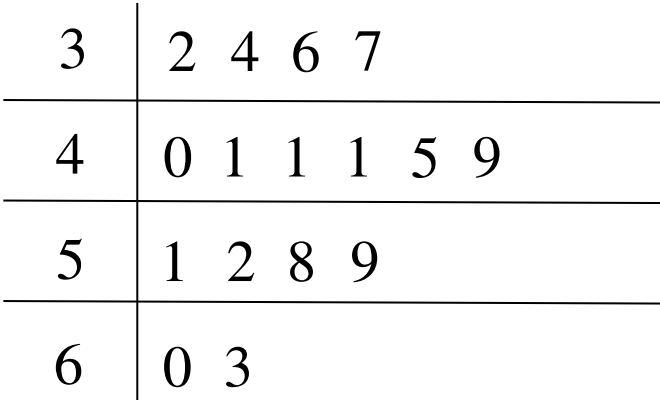
.....
(1)

(b) Use the graph to estimate the arm span of a person with a height of 165 cm.

.....
(2)

(Total for Question 5 is 3 marks)

6. The stem and leaf diagram shows the lengths of fish caught in a competition.



Key:
3|2 means 32

(a) Write down the mode.

.....

(1)

(b) Find the median

.....

(2)

(c) Find the range

.....

(2)

(Total for Question 6 is 5 marks)

7. The table shows the ages of people at a sports club.

Age, a	Frequency
$0 < a \leq 10$	4
$10 < a \leq 20$	7
$20 < a \leq 30$	5
$30 < a \leq 40$	4

(a) Estimate the mean age.

.....
(3)

(b) Write down the modal class

.....
(1)

(c) Find the class that contains the median

.....
(1)

(Total for Question 7 is 5 marks)

★

□

★★

□

★★★

□

8. The mean of five numbers is 12.

One of the numbers is 20.

The other four numbers are all equal.

Find the four numbers.

(Total for Question 8 is 3 marks)

★

□

★★

□

★★★

□

9. The mean of 5 numbers is 14.

A sixth number is added.

The new mean becomes 15.

Find the sixth number.

(Total for Question 9 is 3 marks)

Score:

I am confident with:

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I need to work on:

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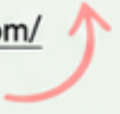
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FOUNDATION TIER

Graphs: Knowledge Test 1



INSTRUCTIONS

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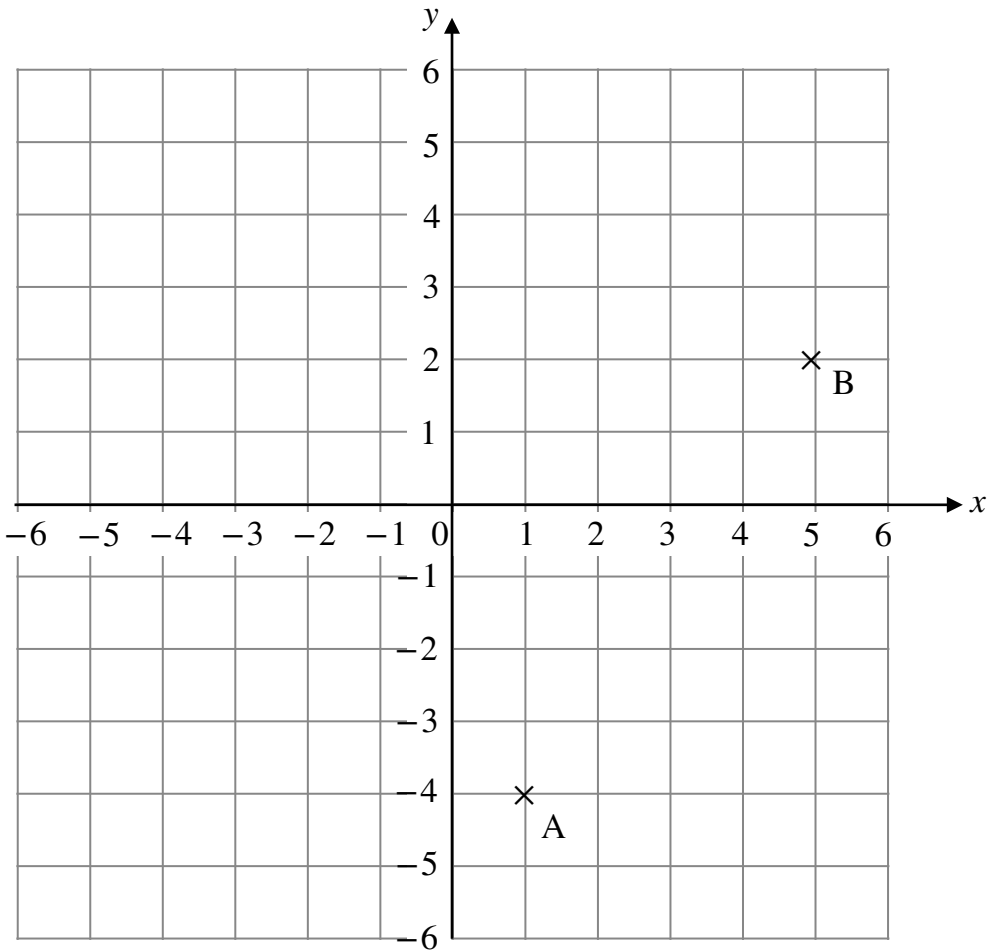
ADVICE

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.



You've got this! 

1. The points A and B are shown on the grid.



(a) Write down the coordinates of the point A.

.....
(1)

(b) Write down the coordinates of the midpoint of AB.

.....
(2)

(c) On the grid, mark with a cross (×) the point with coordinates (-1, 5).
Label this point C.

(1)

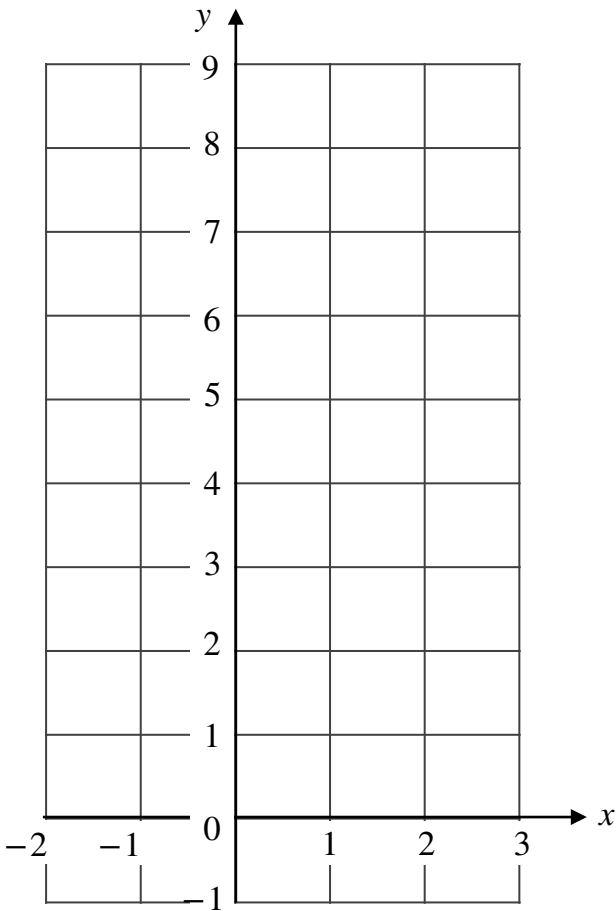
(Total for Question 1 is 4 marks)

2. (a) Complete the table of values for $y = -2x + 5$.

x	-2	-1	0	1	2	3
y			5		1	

(2)

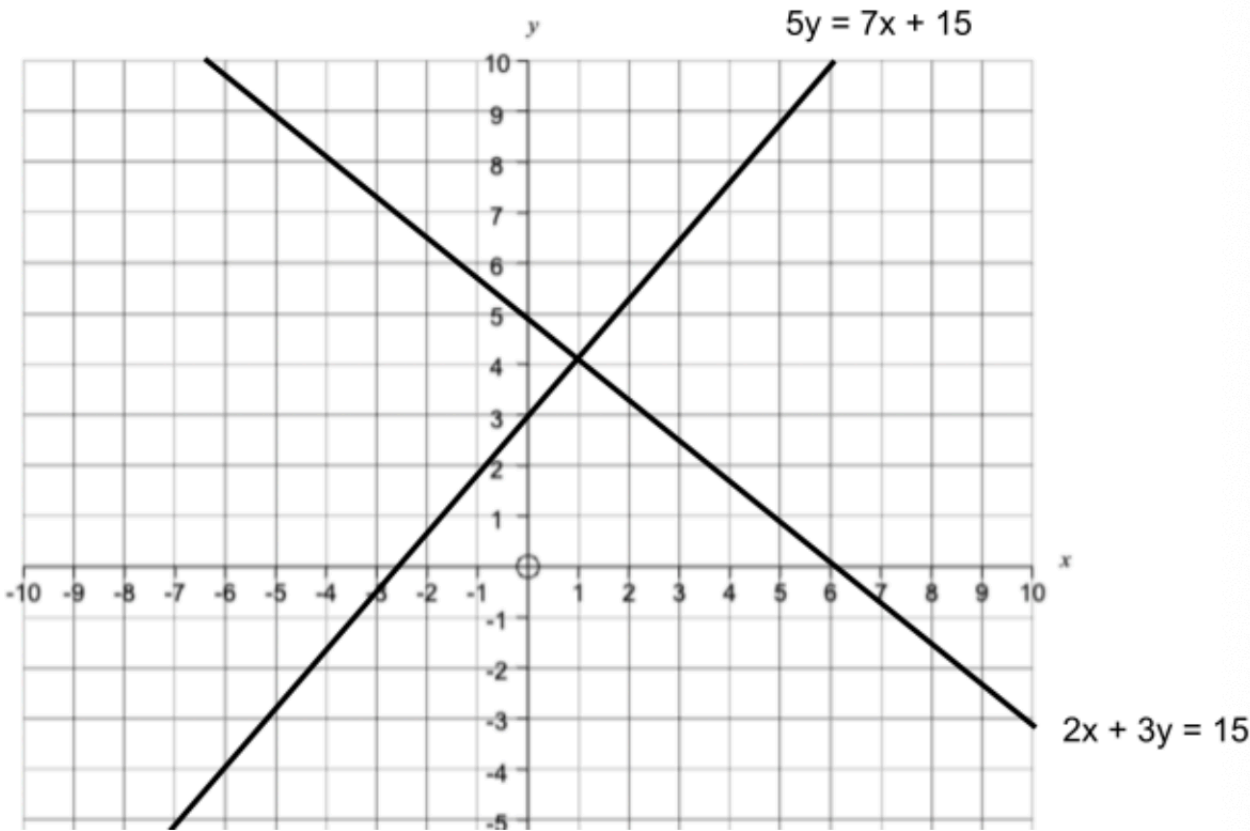
(b) On the grid, draw the graph of $y = -2x + 5$ for values of x from -2 to 3



(2)

3. Below are the graphs of

$5y = 7x + 15$
 $2x + 3y = 15$



Use the graphs to solve the simultaneous equations

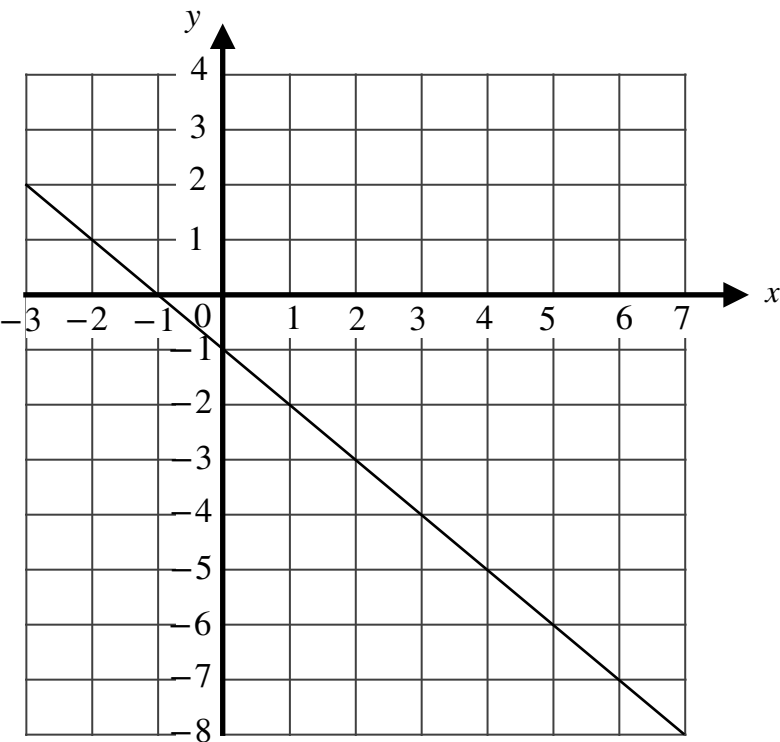
$5y = 7x + 15$
 $2x + 3y = 15$

$x = \dots\dots\dots$
 $y = \dots\dots\dots$

(Total for Question 3 is 2 marks)

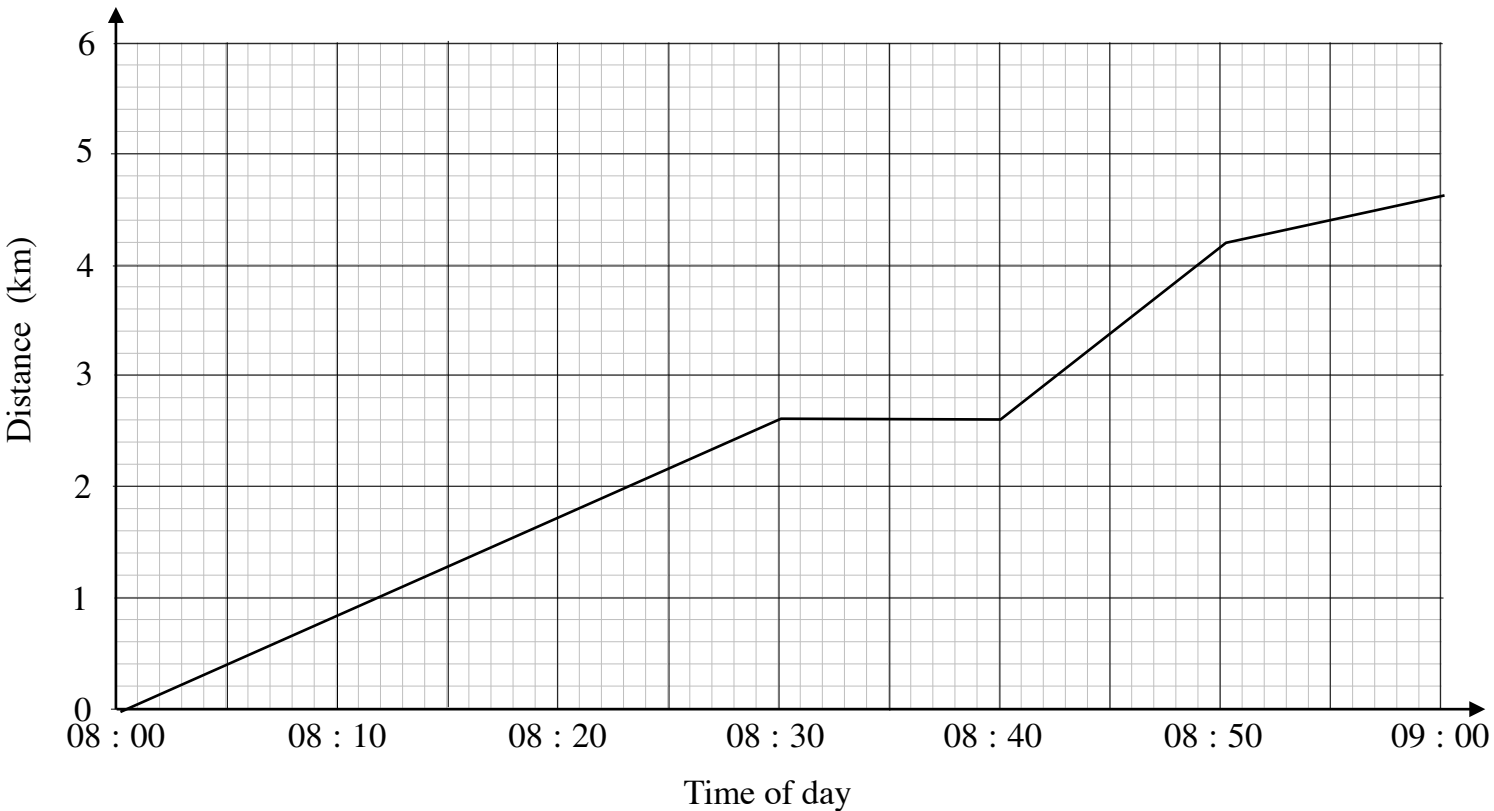
4. A straight line L is shown on the below grid.

Work out the equation of the line L.



.....
(Total for Question 4 is 3 marks)

5. A distance-time graph shows part of a cyclist's journey.



(a) How far had the cyclist travelled after 30 minutes?

.....
(1)

(b) How long did it take to travel 4.2 km?

.....
(1)

(c) For how many minutes was the cyclist stationary for?

.....
(1)

(Total for Question 5 is 3 marks)

Score:

I am confident with:

.....

.....

.....

I need to work on:

.....

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.....

.....