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Worked Solutions

GCSE

C300U20-1

S25-C300U20-1

WEDNESDAY, 4 JUNE 2025 – MORNING

MATHEMATICS – Component 2
Calculator-Allowed Mathematics
FOUNDATION TIER

2 hours 15 minutes

ADDITIONAL MATERIALS

An additional formulae sheet.

A calculator will be required for this examination.

A ruler, protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** questions.

Write your answers in the spaces provided in this booklet. If you run out of space, use the additional page(s) at the back of the booklet, taking care to number the question(s) correctly.

Take π as 3·142 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the need for good English and orderly, clear presentation in your answers.

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	4	
2.	5	
3.	6	
4.	4	
5.	5	
6.	2	
7.	2	
8.	5	
9.	5	
10.	5	
11.	8	
12.	8	
13.	5	
14.	5	
15.	4	
16.	4	
17.	8	
18.	7	
19.	6	
20.	5	
21.	5	
22.	6	
23.	6	
Total	120	

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Please note that these worked solutions have neither been provided nor approved by Eduqas and may not necessarily constitute the only possible solutions. Please refer to the original mark schemes for full guidance.

Any writing in blue should be written in the exam.

Anything written in green in a rectangle doesn't have to be written in the exam.

If you find any mistakes or have any requests or suggestions, please send an email to curtis@cgmaths.co.uk

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Formula list

Area and volume formulae

Where r is the radius of the sphere or cone, l is the slant height of a cone and h is the perpendicular height of a cone:

Curved surface area of a cone = πrl

Surface area of a sphere = $4\pi r^2$

Volume of a sphere = $\frac{4}{3}\pi r^3$

Volume of a cone = $\frac{1}{3}\pi r^2 h$

Kinematics formulae

Where a is constant acceleration, u is initial velocity, v is final velocity, s is displacement from the position when $t = 0$ and t is time taken:

$$v = u + at$$

$$s = ut + \frac{1}{2}at^2$$

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

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Answer **all** questions.

1. (a) Write twelve million three hundred thousand in figures. [1]

12,300,000

(b) Write these numbers in order of size.
Start with the smallest number. [1]

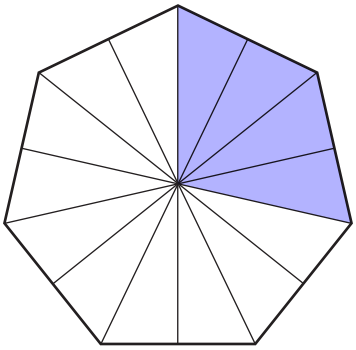
Writing 0s so that every number has the same number of decimal places makes them easier to compare

2·450 2·070 2·600 2·174

2.07 2.174 2.45 2.6

smallest largest

(c) Shade $\frac{2}{7}$ of the regular shape shown below. [1]



$\frac{2}{7} \times 14$ ← There are 14 equal sections. Doing 2/7 of these finds that 4 of the sections should be shaded

(d) Circle the **incorrect** statement below. [1]

$-12 < -9$ $-9 < 12$ $-9 > -12$ $-9 < -12$ $12 > -9$

-9 is greater than -12, so it should be -9 > -12

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2. Edugym offers exercise classes and sells drinks and supplements.
The two tables below show some of the costs.

Exercise Class	Cost per class
Bodymax	£4.75
Circuits	£6.70
Kettlebells	£4.25
Spin	£5.50

Drinks and supplements	Cost
Bottle of water	85p
Isotonic drink	£1.89
Energy gel	£2.29

(a) Last week Henry exercised at Edugym.
He attended a circuits class and a spin class.
He bought a bottle of water and an energy gel.

How much did Henry spend at Edugym last week? [1]

6.70 + 5.50 + 0.85 + 2.29 ← Adding the costs in pounds. 85p is £0.85

£15.34

(b) After an exercise class, Edugym received £13.23 from the sale of isotonic drinks.

How many isotonic drinks were sold? [2]

13.23 ÷ 1.89 ← Dividing the £13.23 by the £1.89 cost of each isotonic drink finds that there were 7 isotonic drinks sold

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(c) Edugym offer a pay monthly deal for exercise classes.

Pay monthly deal:
£40 per month for unlimited classes

Jade attends three circuits classes, four bodymax classes and two kettlebells classes a month.

Should Jade use the pay monthly deal?

Yes ☐ No ☐

Give the reason for your answer. [2]

$3 \times 6.70 + 4 \times 4.75 + 2 \times 4.25$ ← Adding all the costs of the classes finds that they would cost £47.60

Two kettlebells classes

Four bodymax classes

Three circuits classes

Yes, £40 < £47.60 ← The £40 for the monthly deal is less than the £47.60 it would cost to do the classes without the deal

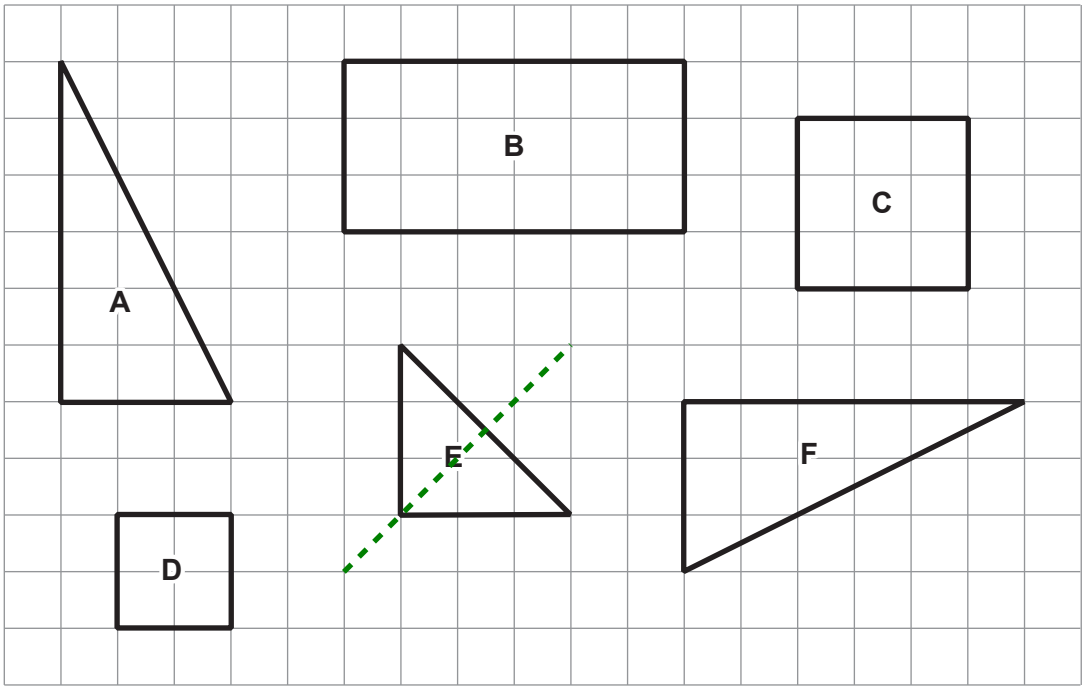
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3. (a) The grid below shows 6 shapes.



Complete the following sentences about the shapes on the grid. [3]

Shape ..E.. has exactly one line of symmetry.

Shape ..B.. has rotational symmetry of order two.

Shapes ..A.. and ..F.. are congruent.

The one line of symmetry is drawn on shape E. It cuts the shape into two identical halves which are a reflection of each other.

Shape B can be rotated twice within a full turn with it looking the same so has rotational symmetry order of two.

Shapes A and F are the same shape and size so are congruent

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(b) (i) Calculate the value of x. [2]

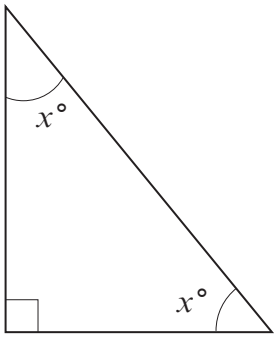


Diagram not drawn to scale

180 - 90 ← There are 180° in a triangle. Subtracting the right-angle (90°) from 180° finds that there are 90° left in the triangle

90 ÷ 2 ← Dividing the 90° left in the triangle by the 2 equal angles finds that x must be 45°

x = 45

(ii) Calculate the value of y. [1]

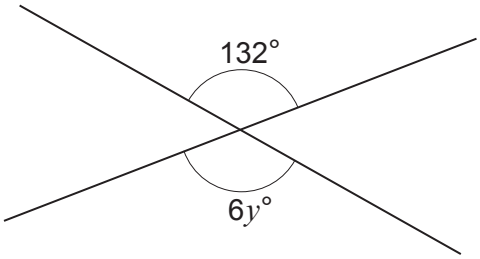


Diagram not drawn to scale

132 ÷ 6 ← 6y = 132°, as vertically opposite angles are equal. Dividing both sides by 6 gets y on its own

y = 22

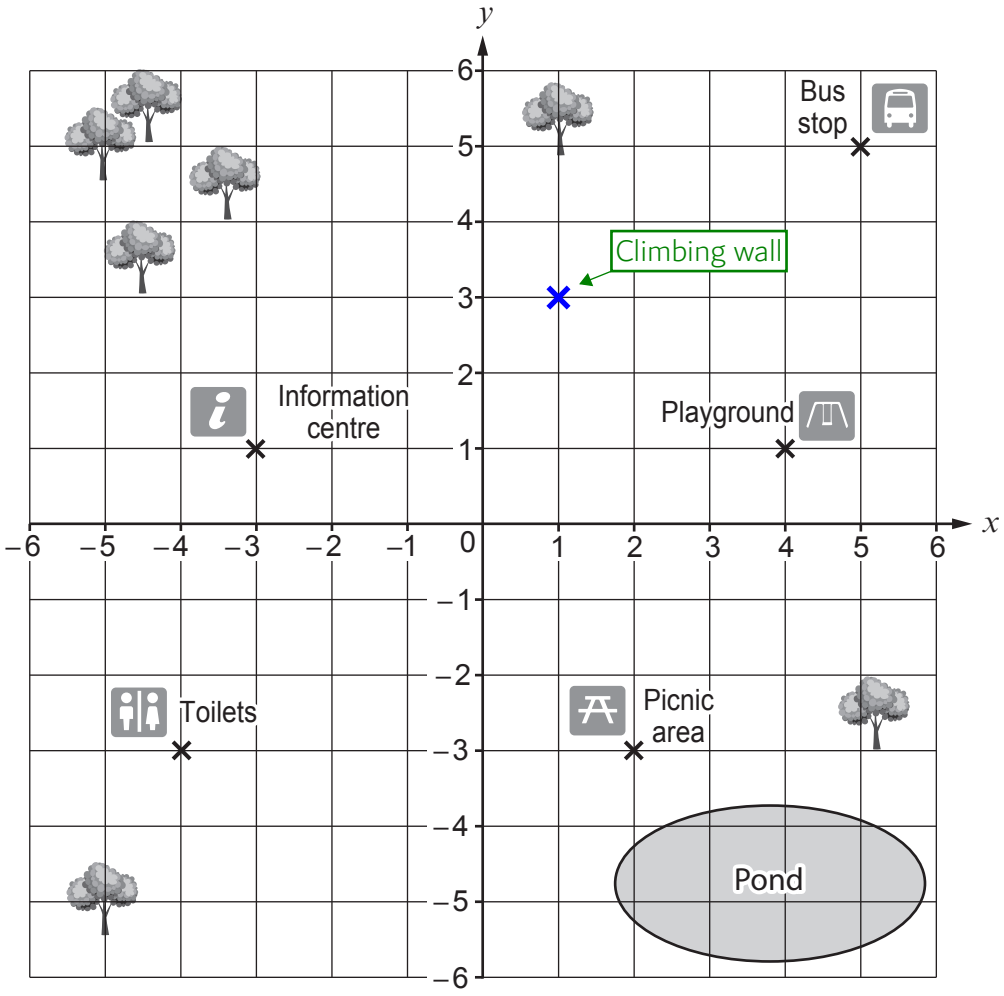
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4. The grid below shows the map of a park.



(a) Write down the coordinates of the playground. [1]

(4 , 1)

x-coordinate y-coordinate

(b) There is a climbing wall at the midpoint between the bus stop and the information centre.
Mark with a cross (×) the position of the climbing wall on the map. [1]

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(c) The scale on the map is:

1 cm represents 45 m

Caelan walks directly from the picnic area to the toilets in a straight line.
He walks back to the picnic area along the same straight line.

How far did Caelan walk altogether?
Give your answer in metres. [2]

6 + 6 ← It is 6 cm on the map to the toilets then 6 cm on the map back to the picnic area. It is 12 cm on the map in total

12 × 45 ← Multiplying the 12 cm by the 45 m each centimetre represents finds that the actual distance is 540 m

Distance = 540 m

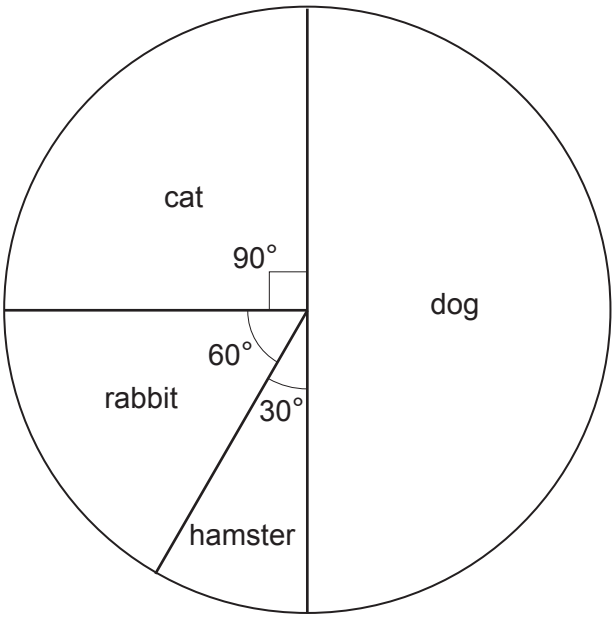
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5. Each student in a group was asked to choose their favourite pet.
The pie chart below shows the results.



(a) What fraction of the students chose hamster? [2]
Give your answer in its simplest form.

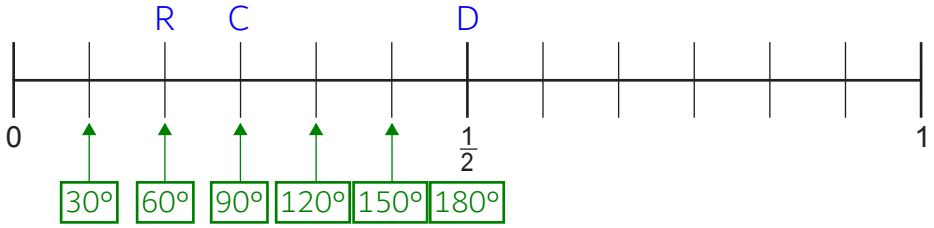
$\frac{30}{360}$ ← 30° out of the total 360° in the pie chart are for hamster

$\frac{1}{12}$ ← The calculator can simplify the fraction

(b) One student is chosen at random from the group.

D is the probability that the student's favourite pet is a dog
C is the probability that the student's favourite pet is a cat
R is the probability that the student's favourite pet is a rabbit.

Mark **D**, **C** and **R** on the probability scale below. [3]



360 ÷ 12 = 30 ← Dividing the 360° in total in the pie chart by the 12 divisions on the scale finds that each division is worth 30°

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6. A rectangle has an area of 42 cm^2 and a perimeter of 34 cm.

Calculate the length and width of the rectangle. [2]

34 ÷ 2 = 17 ← There are 2 lengths and 2 widths on the perimeter of a rectangle. So dividing the perimeter by 2 finds that the total of 1 length and 1 width is 17 cm

1, 42
2, 21
3, 14 ← Area of rectangle = length × width. So listing out the factor pairs of 42 gives possible lengths and widths. Listing the factor pairs until there is a pair which add to 17

Length = 14 cm Width = 3 cm

14 × 3 = 42. 14 + 14 + 3 + 3 = 34

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7. Rita writes down two numbers.

Her numbers satisfy the following conditions.

- Both numbers are greater than 12.
- Both numbers are prime numbers.
- The sum of the two numbers is 40.

Which two numbers does Rita write down? [2]

40 - 13 = 27 ← Subtracting a prime number greater than 12 from 40 finds what the other number would be. 27 is not prime as it is divisible by 3 (prime numbers are only divisible by themselves and 1)

40 - 17 = 23 ← 17 is the next prime number after 13. Subtracting this from 40 finds that the other number would be 23, which is also prime

The calculator can be used to check if a number is prime by formatting it as a product of prime factors. If it comes back as itself, it is prime

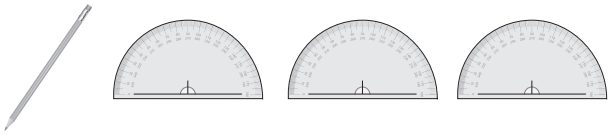
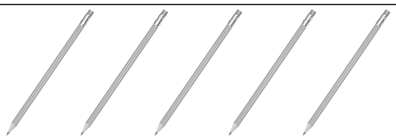
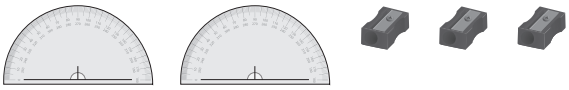
The numbers that Rita writes down are 17 and 23

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8. The table below shows some stationery items and their costs.

Stationery items	Total cost
	£4.39
	£3.20
	£5.38

Assume that:

- each pencil costs the same amount
- each protractor costs the same amount
- each pencil sharpener costs the same amount.

Complete the table below to show the cost of each item. [5]

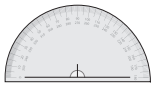
3.20 ÷ 5 ← Dividing the £3.20 cost of 5 pencils by 5 finds that 1 pencil costs £0.64

4.39 - 0.64 ← Subtracting the cost of a pencil from the £4.39 cost of 1 pencil and 3 protractors finds that the 3 protractors costs £3.75

3.75 ÷ 3 ← Dividing the cost of 3 protractors by 3 finds that 1 protractor costs £1.25

5.38 - 1.25 - 1.25 ← Subtracting the cost of two protractors from the cost of 2 protractors and 3 sharpeners finds that the cost of the 3 sharpeners is £2.88

2.88 ÷ 3 ← Dividing the cost of 3 sharpeners by 3 finds that 1 sharpener costs £0.96

Stationery item	Cost
	£0.64
	£1.25
	£0.96

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9. Demitri, Greta and their friends play air hockey matches throughout the summer.



Each player calculates their points total using the following formula.

$$\text{Points total} = 3 \times \text{number of wins} + 2{\cdot}5 \times \text{number of draws} - \text{number of losses}$$

(a) So far this summer, Demitri has 7 wins, 8 draws and 9 losses.

What is his points total for the matches he has played? [2]

$3 \times 7 + 2.5 \times 8 - 9$ ← Substituting the number of wins, the number of draws and the number of losses into the right side of the formula

32

(b) So far this summer, Greta has a points total of 48.
She has won 6 matches and had no losses.

How many matches has she drawn? [3]

$48 = 3 \times 6 + 2.5d$ ← Substituting the points total and the number of wins into the formula. Letting d be the number of draws. Ignoring the number of losses as there are no losses

$30 = 2.5d$ ← Subtracting 3×6 from both sides to get the d term on its own

12 ← Dividing both sides by 2.5 finds that 12 = d

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10. The temperature in Nuuk, Greenland was recorded at midday for each of the days Monday to Saturday.
The temperatures, in °C, are listed below.

–9 –8 –4 –5 –1 –8

(a) What is the mode of these temperatures? [1]

-8 ← -8 appeared more than any other temperature

(b) What is the median of these temperatures? [2]

-9, -8, -8, -5, -4, -1 ← Putting the temperatures in order then underlining from both ends until the middle temperatures are found

-8 - 5 ← -8 and -5 are in the middle. Working out what is halfway between them by doing the mean. First adding the -8 and -5 gives -13

$-\frac{13}{2}$ ← Then dividing the total by 2 finds the mean. It can be left as a fraction

(c) The temperature at midday on Sunday was recorded.
The mean midday temperature for the 7 days was –6 °C.

What was the temperature at midday on Sunday? [2]

$\frac{m}{t\ n}$ ← Writing a formula triangle for mean, total, number. Total is the total of the temperatures and number is how many temperatures there are

-6 × 7 = -42 ← Covering t in the formula triangle finds that total = mean × number. So multiplying the mean of -6 by the 7 days finds that the total temperature must be -42

-9 - 8 - 4 - 5 - 1 - 8 ← Adding all the temperatures for Monday to Saturday finds that their total is -35

-42 - -35 ← Subtracting the total for Monday to Saturday from the total of all 7 days finds that Sunday must be -7

The temperature at midday on Sunday was ..... -7 ..... °C

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11. (a) Write down the next two terms in the sequence. [2]

–15, –12, –9, –6, -3 , 0

The sequence goes up in 3s. -6 + 3 = -3 then -3 + 3 = 0

(b) Simplify $16y-3(2y+7)$. [2]

16y - 6y - 21 ← Expanding the bracket. -3 × 2y = -6y and -3 × 7 = -21

10y - 21 ← Collecting like terms. 16y - 6y = 10y

(c) Factorise $12w-9$. [1]

3(4w - 3) ← The highest common factor of 12w and -9 is 3. Bringing this out, dividing both terms by 3 and leaving the result in a bracket

(d) Solve $5x+3=14$. [2]

5x = 11 ← Subtracting 3 from both sides eliminates the +3 on the left and gets the x term on its own

$x = \frac{11}{5}$ ← Dividing both sides by 5 eliminates the 5 on the left and gets x on its own

(e) Layla is trying to solve the equation $\sqrt[3]{y}=5$.

She uses the method shown below.

$\sqrt[3]{y} = 5$

$y = 5 \times 3$ ← This is incorrect

So, y = 15

Explain why Layla's method is incorrect. [1]

$y = 5^3$ ← The opposite of cube rooting is cubing, not multiplying by 3

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12. (a) Calculate 37% of 650. [2]

$\frac{37}{100} \times 650$ ← Putting the 37% over 100 converts it to a fraction, which when multiplied by finds 37%. 'of' means to multiply

240.5

(b) A piece of elastic is 477 mm long.

It can be stretched by $\frac{2}{9}$ of its length before it snaps.

What is the length of the elastic when it snaps? [3]

$\frac{2}{9} \times 477$ ← This finds that 2/9 of its length is 106 mm

$477 + 106$ ← Adding the value of 2/9 of the length onto the original length finds that it snaps at 583 mm

The length of the elastic when it snaps is .....583..... mm.

(c) Write 54 as a percentage of 171.
Give your answer correct to 1 decimal place. [3]

$\frac{54}{171} \times 100$ ← Writing 54 as a fraction of 171. Multiplying by 100 converts it to a percentage

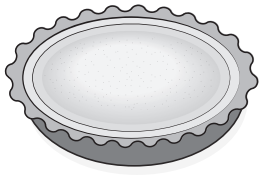
31.6% ← Rounding 31.57... to 1 decimal place

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13. The recipe below is used to make a small pumpkin pie.



Small pumpkin pie
(serves 8)

340g	shortcrust pastry
450g	pumpkin
2	large eggs
75g	brown sugar
275ml	double cream
$\frac{1}{2}$ tsp	cinnamon

(a) The recipe can be changed to make a large pumpkin pie to serve 12 people.
Peter makes a large pumpkin pie.

How many grams of pumpkin does Peter need? [2]

$450 \div 8$ ← Dividing the 450g of pumpkin in the recipe by 8 finds that 56.25g of pumpkin serves 1 person

56.25×12 ← Multiplying the pumpkin needed for 1 person by the 12 people finds that 675g is needed to serve 12 people

675g

(b) Grace made a number of **small** pumpkin pies for a Halloween party.
She used a total of 1·65 litres of double cream to make her pies.

How many small pumpkin pies did Grace make? [3]

1.65×1000 ← 1 litre = 1000 ml, so multiplying the 1.65 litres by 1000 converts it to 1650 ml

$1650 \div 275$ ← Dividing the 1650 ml by the 275 ml for one small pumpkin pie finds that there were 6 small pumpkin pies

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14. Igor invests £2500 in a savings account.
The account pays 5·4% simple interest per year.
The interest is added to the account at the end of each year.

After how many years will the amount of money in the savings account be greater than £3500?
You must show all your working. [5]

$3500 - 2500 = 1000$ ← Subtracting the original £2500 from the £3500 finds that more than £1000 interest is needed

$\frac{5.4}{100} \times 2500$ ← Putting the 5.4% over 100 convert it to a fraction, which when multiplied finds that 5.4% of £2500 is £135

$1000 \div 135$ ← Dividing the £1000 by the £135 interest each year finds that it would take 7.4... years to get £1000 interest

8 ← Rounding up to the next whole number of years

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15.





Ahmed buys 1·4 kg of Brazil nuts and 0.8 kg of cashew nuts.
He pays a total of £21.84.
The cost of 1 kg of Brazil nuts is £9.60.

What is the cost of 1 kg of cashew nuts? [4]

1.4 × 9.60 ← Multiplying the 1.4 kg of Brazil nuts by the £9.60 for 1 kg finds that the cost of the Brazil nuts is £13.44

21.84 - 13.44 ← Subtracting the cost of the Brazil nuts from the total cost finds that the cost of the cashew nuts is £8.40

8.40 ÷ 0.8 ← Dividing the £8.40 cost of the cashew nuts by the 0.8 kg finds that 1 kg of cashew nuts costs £10.50

The cost of 1 kg of cashew nuts is £10.50

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16. *PQRS* is a parallelogram.
U is a point on the line *PS*.
T is a point on the line *PR*.

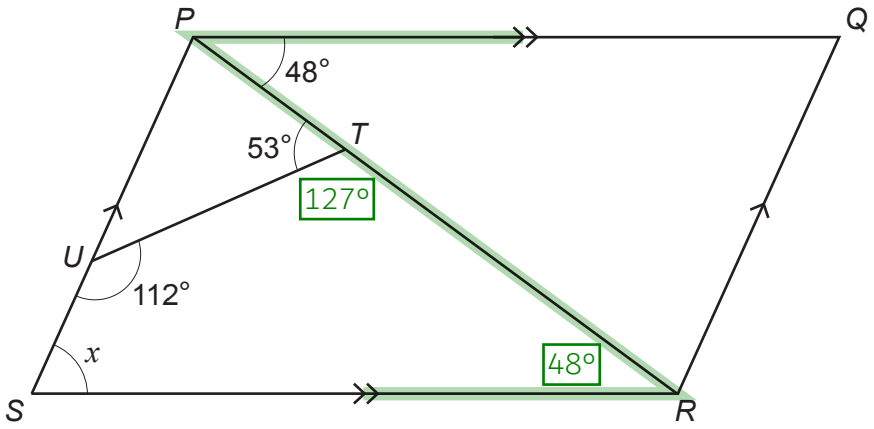


Diagram not drawn to scale

Show that $x = 73°$.
Give a reason for each step of your answer. [4]

Angle SRP = 48° as alternate angles are equal

The insides of the z-shape between the parallel lines are alternate angles

Angle UTR = 180° - 53° = 127° as angles around a point on a straight line add up to 180°

x = 360° - 112° - 127° - 48° = 73° as angles in a quadrilateral add up to 360°

SUTR is a quadrilateral

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17. Use the information below to answer the following questions.

1 mile = 1·6 kilometres (km)
1 gallon = 4·5 litres

(a) Heidi is travelling to Exeter on the M5 motorway.
Motorway signs display the distances in **miles**.



Heidi passes the sign shown above at 5:35 p.m.
She intends to travel at an average speed of **80 km/h** for the remainder of her journey to Exeter.

At what time does Heidi expect to arrive in Exeter?
Give your answer to the nearest minute.
You must show all your working. [5]

$s \overset{d}{} t$ ← Writing a formula triangle for distance, speed, time

64×1.6 ← Multiplying the 64 miles by 1.6 converts it to 102.4 km

$102.4 \div 80$ ← Covering t finds that time = distance ÷ speed. So dividing the 102.4 km by the 80 km/h finds that it will take 1.28 hours. Formatting this as a sexagesimal gives 1°16'48", which can be read as 1 hour 16 minutes 48 seconds, which is 1 hours 17 minutes to the nearest minute

$1°17° + 5°35°$ ← Adding the 1 hour 17 minutes to the 5 hours 35 minutes as sexagesimals gives 6°52'0", which can be read as 6 hours 52 minutes

Heidi expects to arrive in Exeter at 6:52pm

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(b) At the start of the journey, Heidi stopped at a garage to fill her fuel tank with diesel.
The cost of diesel was £1.52 per litre.
Heidi spent £102.60 on diesel.

How many **gallons** of diesel did Heidi buy? [3]

102.60 ÷ 1.52 ← Dividing the £102.60 by the £1.52 per litre finds that Heidi buys 67.5 litres

67.5 ÷ 4.5 ← Dividing the 67.5 litres by the 4.5 litres in each gallon converts it to 15 gallons

Heidi buys ..... 15 ..... gallons of diesel.

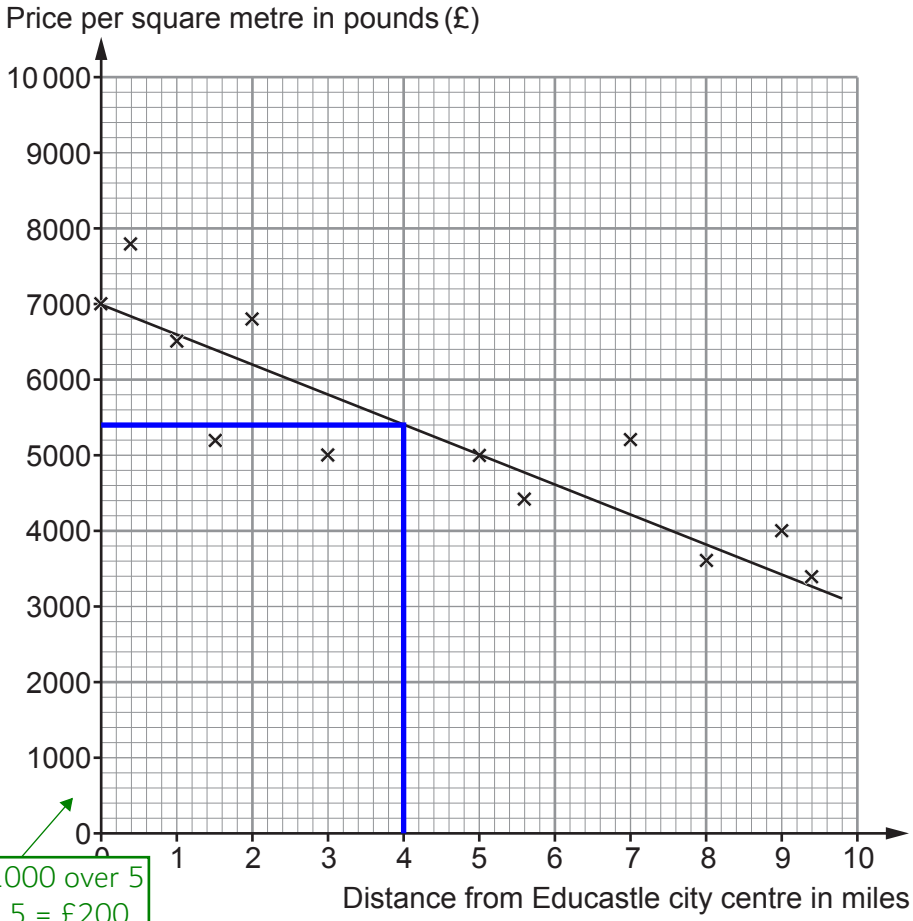
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18. When selling an apartment, the selling price can be calculated using the price per square metre of floor area.

The scatter diagram shows the price per square metre of 12 apartments and their distance from Educastle city centre.
It also shows the line of best fit for the data.



This scale goes up £1000 over 5 small boxes. £1000 ÷ 5 = £200, so each small box is worth £200

(a) Describe the relationship between the price per square metre of an apartment and its distance from Educastle city centre. [1]

Negative correlation

As the distance from Educastle city centre increases, the price per square metre decreases. So there is negative correlation

(b) Use the line of best fit to estimate the price per square metre of an apartment that is 4 miles from Educastle city centre. [1]

£5400 ← Reading up from 4 miles to the line then across to the price

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(c) Ellie says,

"All apartments 6 miles from Educastle city centre cost £4600 per square metre."

Is Ellie's statement correct?

Yes ☐ No ☑

Give the reason for your answer. [1]

£4600 is an estimate

The £4600 is an estimate using the line of best fit, which was based on the data from 12 apartments. Not all the points on the scatter graph are exactly on the line of best fit so there can be some variation from this straight line

(d) The table below shows information about the house prices of 35 houses on a street outside Educastle city centre.

Price, p, thousand pounds	Frequency	
$100 < p \leqslant 150$	8	× 125 = 1000
$150 < p \leqslant 200$	12	× 175 = 2100
$200 < p \leqslant 250$	9	× 225 = 2025
$250 < p \leqslant 300$	5	× 275 = 1375
$300 < p \leqslant 350$	1	× 325 = 325

Calculate an estimate for the mean house price on the street. [4]

Multiplying the frequencies by the midpoints for each category gives an estimate for the total value of the houses in each category. Then adding up all these totals gives an estimated overall total of 6825 thousand pounds

6825 ÷ 35 ← Mean = total ÷ number, where total is the total value of all the houses and number is the number of houses

£195000 ← The estimated mean is 195 thousand pounds

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19. Greg has been saving 10p and 20p coins in a money jar.

The ratio of the number of 10p coins to the number of 20p coins in Greg's money jar is 2:7.

Greg gives all the 20p coins to his children, Rona and Jamie, in the ratio 3:4.
The 20p coins that Rona was given have a total value of £3.60.

What was the total value of the coins in Greg's money jar? [6]
You must show all your working.

360 ÷ 20 ← £3.60 is 360p. Dividing the 360p by 20p finds that Rona was given 18 20p coins

18 ÷ 3 ← 3 parts of the 2nd ratio represent the 18 coins. Dividing the 18 coins by 3 finds that 1 part of the 2nd ratio is worth 6 coins

6 × 7 ← There are 3 + 4 = 7 parts in total in the 2nd ratio. Multiplying the value of 1 part of the 2nd ratio by 7 finds that there were 42 20p coins in total

42 ÷ 7 ← 7 parts of the 1st ratio represent the 42 coins. Dividing the 42 coins by 7 finds that 1 part of the 1st ratio represents 6 coins

6 × 2 ← Multiplying the value of 1 part of the 1st ratio by 2 finds that there are 12 10p coins

12 × 10 = 120 ← Multiplying the 12 10p coins by 10p finds that there is 120p worth of 10p coins

42 × 20 = 840 ← Multiplying the 42 20p coins by 20p finds that there is 840p worth of 20p coins

1.20 + 8.40 ← 120p is £1.20 and 840p is £8.40. Adding these gives the total value

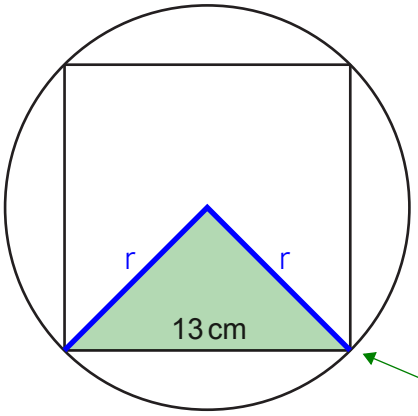
The total value of the coins in Greg's money jar was £9.60

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20. The diagram shows a square inside a circle.
Each corner of the square lies on the circumference of the circle.
The length of each side of the square is 13 cm.



Drawing 2 radii forms a right-angled triangle

Diagram not drawn to scale

Calculate the area of the circle.
Give your answer correct to 1 decimal place.
You must show all your working. [5]

$r^2 + r^2 = 13^2$ ← Using Pythagoras' Theorem in the green right-angled triangle to find the radius. $a^2 + b^2 = c^2$, where a and b are the shorter sides and c is the longest side

$2r^2 = 169$ ← $r^2 + r^2 = 2r^2$. $13^2 = 169$

$r^2 = 84.5$ ← Dividing both sides by 2 gets r^2 on its own

$r = 9.19...$ ← Square rooting both sides gets r on its own

$\pi \times 9.19...^2$ ← Area of circle = $\pi \times$ radius^2

Area of the circle = ... 265.5 ..... cm^2

265.46... is rounded to 1 decimal place

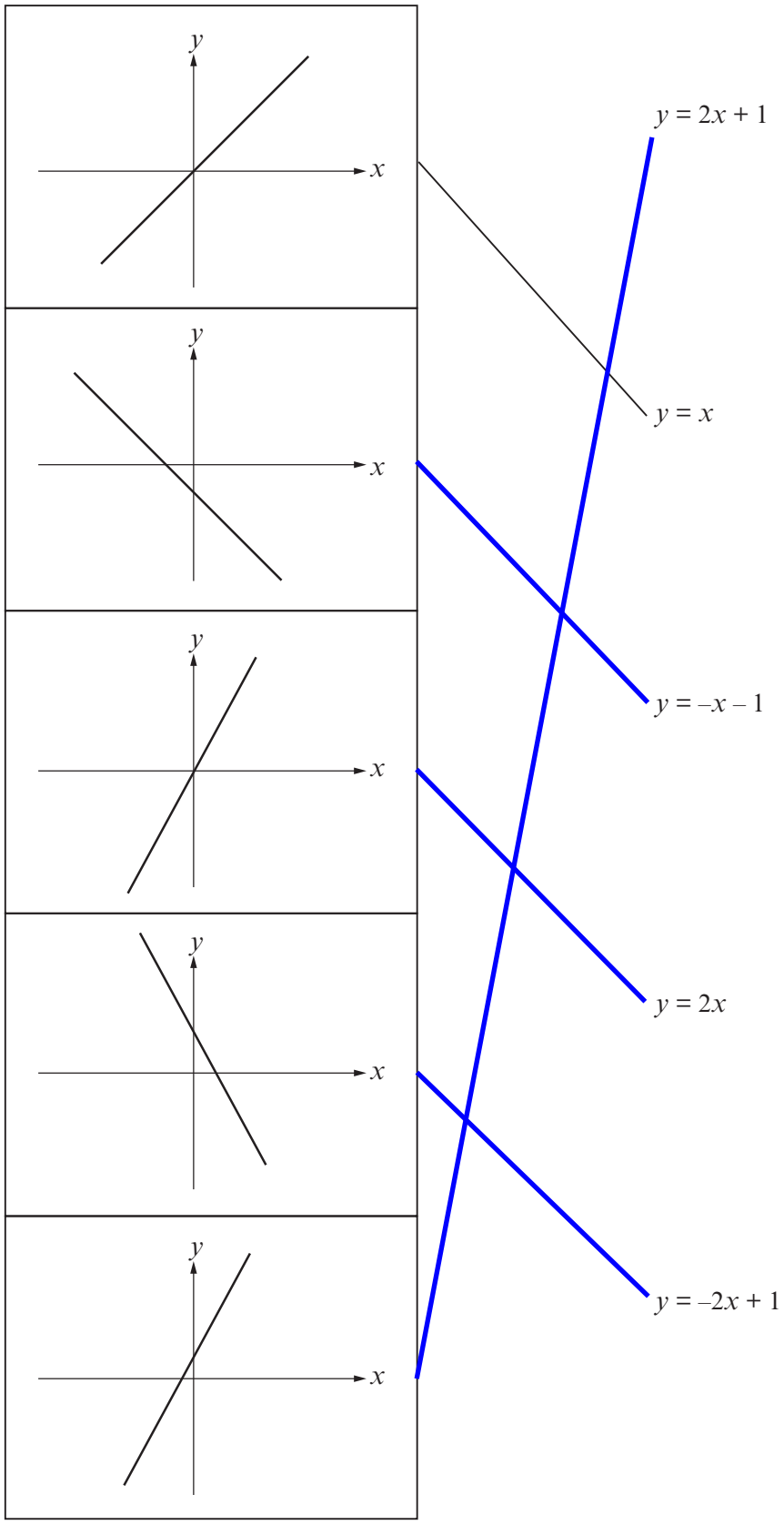
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Table mode can be used on the calculator to give a table of values for each equation, which can be used to help visualise which graph it is. Start: -5. End: 5. Step: 1

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21. (a) Five straight-line graphs and their equations are shown below.
Draw a line to connect each graph to its equation.
One has been completed for you. [2]



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(b) Circle the equation of the straight line that is parallel to $y = 3x + 5$. [1]

$3y = x + 5$ $\quad y = -3x$ $\quad 2y = 6x + 8$ $\quad y = \frac{1}{3}x + 5$ $\quad y + 3x = 7$

The general equation of a straight line is y = mx + c, where m is the gradient and c is the y-intercept. Dividing all terms on both sides of 2y = 6x + 8 by 2 gives y = 3x + 4. This and y = 3x + 5 both have the same gradient of 3 so are parallel

(c) Make y the subject of the following formula. [2]

$$\frac{y}{a} + b = x$$

$\frac{y}{a}$ = x - b ← Subtracting b from both sides gets the term involving y on its own

y = a(x - b) ← Multiplying both sides by a gets y on its own

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22. Yasmin has two bags, Bag *A* and Bag *B*.
Each bag contains some red counters and some blue counters.

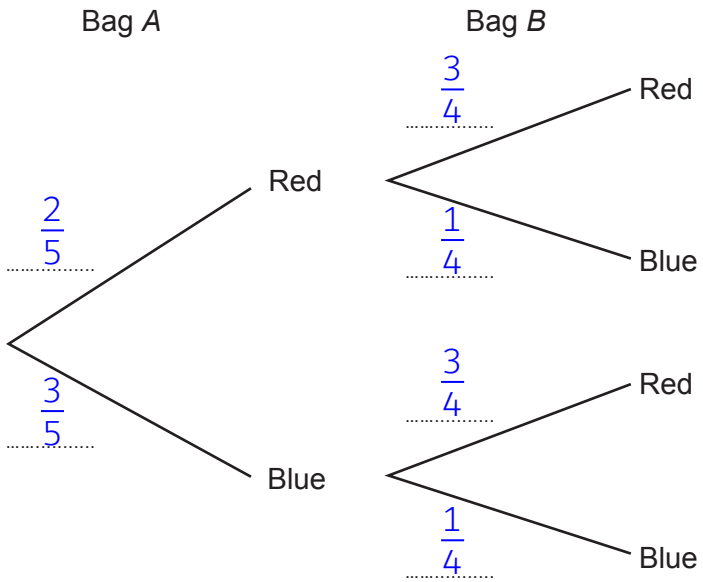
Bag *A* contains 2 red counters and 3 blue counters.
In Bag *B* the number of red counters is three times the number of blue counters. 3 : 1

Yasmin randomly chooses one counter from Bag *A* and then one counter from Bag *B*.

(a) Complete the probability tree diagram. [3]

2 out of the 5 counters in Bag A are red. 2 out of the 5 counters in Bag A are blue.

The ratio of red to blue in Bag B is 3 : 1. 1 + 3 = 4 parts in total. 3 out of the 4 parts represent red and 1 out of the 4 parts represent blue



(b) Calculate the probability that Yasmin chooses at least one blue counter. [3]

$\frac{2}{5} \times \frac{1}{4} + \frac{3}{5}$ ← Red from Bag A AND blue from Bag B OR blue from Bag A (and any colour from bag B). AND means to multiply the probabilities, OR means to add the probabilities

$\frac{7}{10}$

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23. (a)

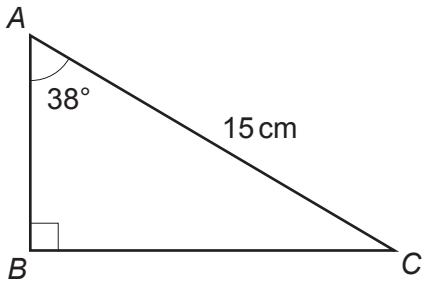


Diagram not drawn to scale

Calculate the length of *AB*. [3]

S O H C A H T O A

Using right-angled trigonometry. Ticking H as the 15 cm is the hypotenuse and ticking A as AB is the adjacent. There are two ticks on the CAH formula triangle so this one can be used

cos38 × 15

Covering A in the CAH formula triangle finds that adjacent = cos of the angle × hypotenuse

11.8 cm

(b)

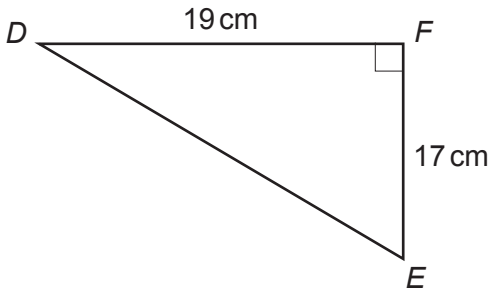


Diagram not drawn to scale

Calculate the size of $D\hat{E}F$. [3]

S O H C A H T O A

Using right-angled trigonometry. Ticking O as the 19 cm is the opposite and ticking A as the 17 cm is the adjacent. There are two ticks on the TOA formula triangle so this one can be used

$\tan x = \frac{19}{17}$

Covering T in the TOA formula triangle finds that tan of the angle = opposite/adjacent

48.2°

Doing the inverse tan of both sides gets the angle x on its own

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Question number	Additional page, if required. Write the question number(s) in the left-hand margin.

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