

GCSE Mathematics

Calculator

Foundation Tier

Free Practice Set 4

1 hour 30 minutes



ANSWERS

Marks shown in brackets for each question (2)

Typical Grade Boundaries

C	D	E	F	G
76	60	47	33	20

Legend used in answers

Green Box - Working out

5b means five times b
 $b = -3$ so $5 \times -3 = -15$

Red Box and ✓ - Answer

48 % ✓

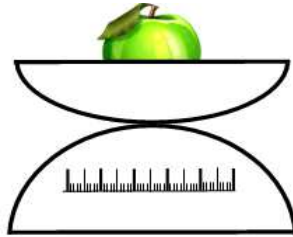
Authors Note

Every possible effort has been made to ensure that everything in this answer paper is accurate and the author cannot accept responsibility for any errors.

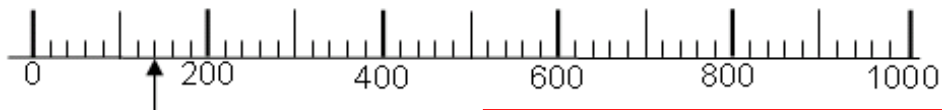
Apart from any fair dealing for the purposes of research or private study as permitted under the Copyright, Designs and Patents Act 1988, this paper may only be reproduced, stored or transmitted in any form or by any means with the prior permission in writing of the author, or in the case of reprographic reproduction in accordance with the terms and licence by the CLA. Enquiries concerning reproduction outside these terms should be sent to the author.

The right of David Weeks to be identified as the author of this work has been asserted by him in accordance with the Copyright, Designs and Patents Act 1988.

1. a) David weighed an apple on a balance



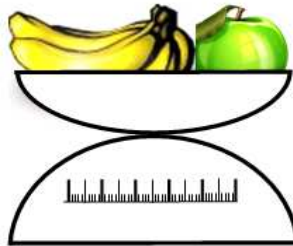
This is what the scale showed:



Reads 140 for apple

Each small division is 20

Then he added some bananas and weighed both



This is what the scale showed:



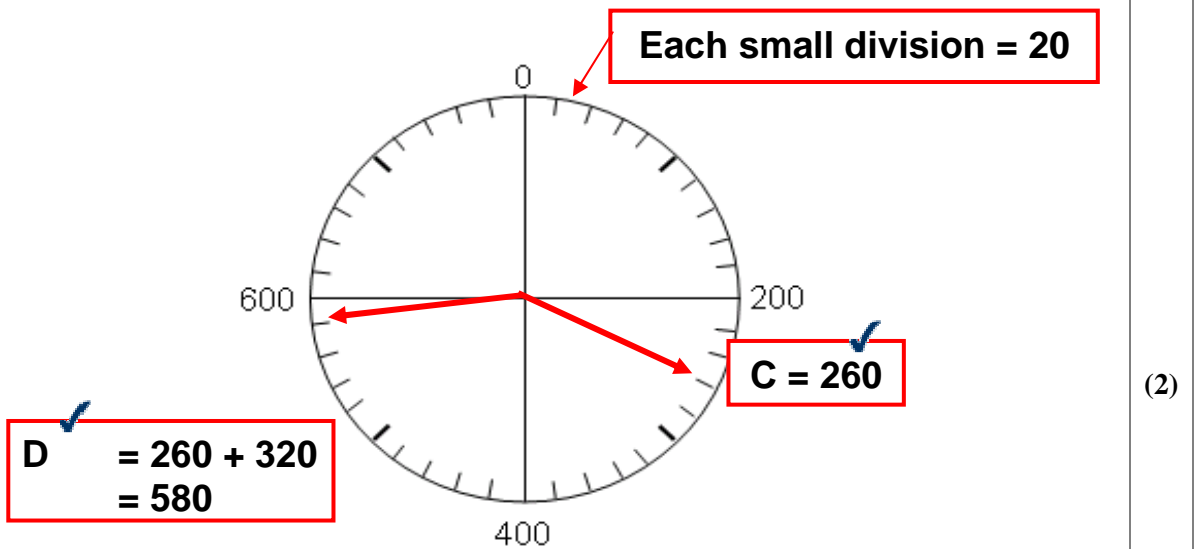
Write the missing numbers in the sentences below.

Reads 640 for apple and bananas

The **apple** weighs **140** grams. (1)

The **bananas** weigh **500** grams. (1)

- b) On the circular scale below, **draw an arrow** to show **260**.
Label it **C**



- c) On the same scale above, draw **another arrow** which is **320 more than C**.
Label it **D**

2. Using your calculator work out

Look for these buttons on your calculator

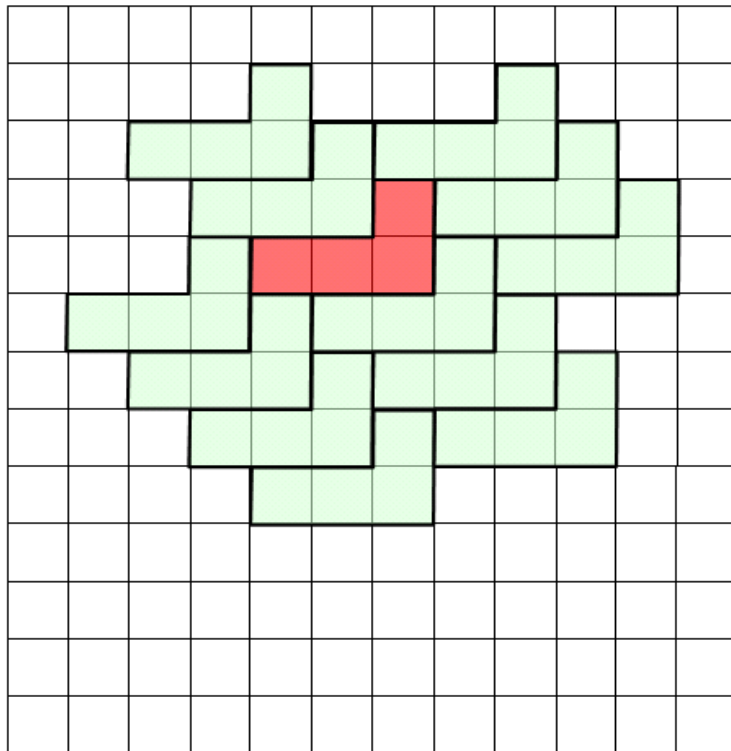
- a) 7^2
- x²** **49**

- b) the square root of 8.41
- √** **2.9**

- c) 14% of 53
- 5 3 x 1 4 shift % =**
- or **5 3 x 1 4 ÷ 1 0 0 =**
- **7.42**

3.

On the grid draw at least 6 shapes to show how the shape **tessellates**.



(2)

4. In a sale Laura bought some baby clothes for $\frac{1}{3}$ off the normal price

a) Complete this label to show the sale price.

$$\frac{1}{3} \text{ of } 11.28 \text{ is } 11.28 \div 3 = 3.76$$

$$11.28 - 3.76 =$$



$\frac{1}{3}$ off SALE

Normal price : £ 11. 28

Sale price £

(1)

1 | 1 | . | 2 | 8 | ÷ | 2 | =

b) In another sale, normal prices were reduced by 50%

Complete this label to show the normal price.

50% off means half price
so double sale price



50 % off SALE

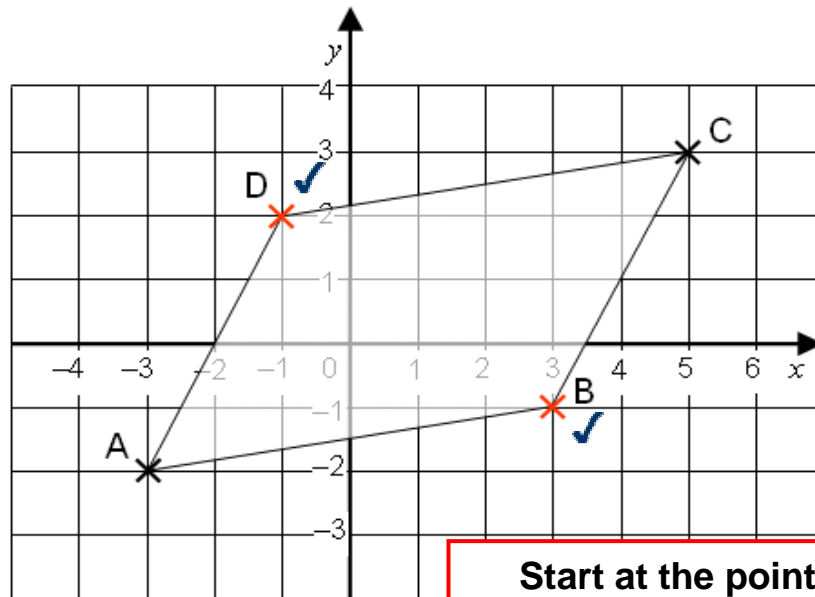
Normal price : £

Sale price £ 2. 87

(1)

2 | . | 8 | 7 | x | 2 | =

5. Look at the graph below



a) What are the co-ordinates of points A and C

3 back along the corridor and 2 down the stairs

A (**- 3, - 2**) (1)

5 forward along the corridor and 3 up the stairs

C (**5, 3**) (1)

b) Mark the point (3 , - 1) and label it B

3 forward along the corridor and 1 down the stairs

(1)

Mark the point (- 1 , 2) and label it D

1 back along the corridor and 2 up the stairs

(1)

c) Join the points A to B to C to D

What is the name of the shape you have drawn

The sides are parallel

parallelogram

(1)

6. Joe made Spaghetti Bolognese for dinner.
Some of the ingredients he used are shown.
Some of the amounts are missing.

Calculate and write the missing amounts in the table

	For 6 people	For 9 people
mushrooms	150 gram	$150 \div 6 \times 9$ 225
minced beef	600	900 grams
spaghetti	750	1125 grams
chopped tomatoes	500 grams	750

(3)

7. a) Olivia and Rob shared 200 marbles between themselves in the ratio of 1:4

How many marbles were in Rob's share.

$$\text{Add shares} = 5$$

$$1 \text{ share is } 200 \div 5 = 40$$

$$\text{Rob: } 4 \times 40 = 160$$

$$160$$

(2)

- b) David mixed some liquid plant food with water.

He adds 280 ml of plant food to 480ml of water.
What is the ration of plant food to water in its simplest terms

$$\frac{280}{480} = \frac{140}{240} = \frac{70}{120} = \frac{35}{60} = \frac{7}{12}$$

$$2 \quad 8 \quad 0 \quad a^b/c \quad 4 \quad 8 \quad 0 \quad =$$

$$\frac{7}{12}$$

(2)

8. Jack recorded some information about his football team.

Altogether they played **25** games of football in a season.

Name	Games played	Goals scored	Fouls made
Jack	21	11	3
Cameron	20	3	1
Craig	18	7	2
Dexter	25	8	4
Rob	5	1	0

a) Which player played the most games

Dexter ✓

(1)

b) What fraction of games of football did Cameron play in.
Write your fraction as simply as possible.

$\frac{20}{25}$

$\frac{4}{5}$ ✓

(2)

c) What was the range of goals scored by the team

Range = highest – lowest = 11 – 1

10 ✓

(2)

d) What was the mean number of fouls made

10 fouls ÷ by 5 players give 2 each

2 ✓

(2)

e) Who scored 7 goals and made 2 fouls

Craig ✓

(1)

9. Matthew thinks of a number.
 He multiplies this number by **10**, then subtracts **40**
 The result is twice the number that he was first thinking of.
 What is the number he was thinking of?

Say the number is n

$$n \rightarrow \times 10 \quad - 40 \quad = 2n$$

$$\begin{aligned} 10n - 40 &= 2n \\ 8n - 40 &= 0 \\ 8n &= 40 \end{aligned}$$

5 ✓

(2)

10. a) What is 3.5 litres in millilitres

$$3.5 \times 1000 = 3,500$$

3,500 ✓

(1)

- b) What is 5000 metres in kilometres

$$5000 \div 1000 = 5$$

5 ✓

(1)

- c) Stuart went to Australia
 He exchanged some money at £1.00 for 1.52 Australian dollar

What is £25 in Australian dollars.

Get more dollars per pound so multiply by 1.52

$$25 \times 1.52 = 38$$

38 ✓

(2)

A\$.....

11. Ella bought some football kit
- Some of the information in the table is missing.
- Complete the table

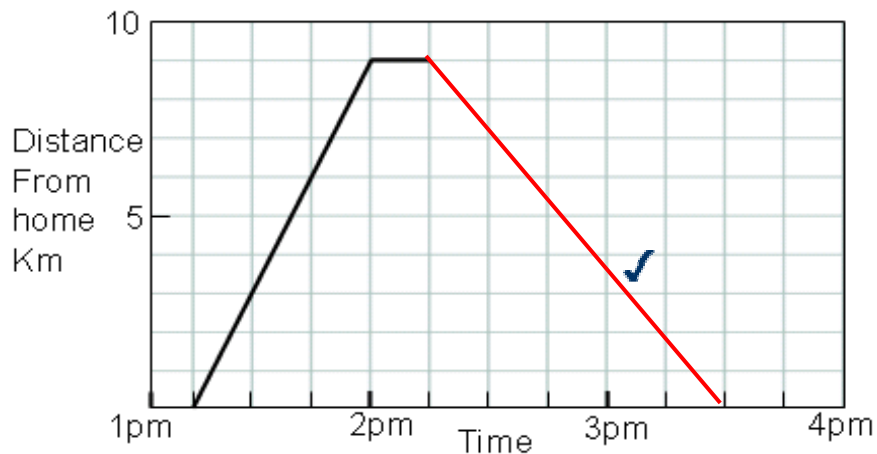
Item	price each	amount	Total cost
Shirt	£14.99	1	£14.99
Pair socks	£2.45 pair	3 pairs	£ 7.35 ✓
Pair Boots	£45.99	1	£45.99
Pair shorts	£ 6.50 ✓	2 pairs	£13.00
Pair Shin Pads	£ 4.50 ✓	1	£ 4.50 ✓
Total			£85.83

$$85.83 - 14.99 - 7.35 - 45.99 - 13 =$$

(3)

12. Chantelle is a cross country runner and she went for a run.

The distance-time graph shows how far away from home she was at different times.



Each division = $\frac{1}{4}$ hour = 15 minutes

a) What time did Chantelle start her run?

..... **1:15pm** ✓ (1)

She ran 9 kilometres in $\frac{3}{4}$ hour.

b) What was her speed in km per hour?

**9 km in $\frac{3}{4}$ hour so 3 km in $\frac{1}{4}$ hour.
12 km in 1 hour**

..... **12** ✓ (2) km/h

Then she stopped

c) How long did she stop for in minutes?

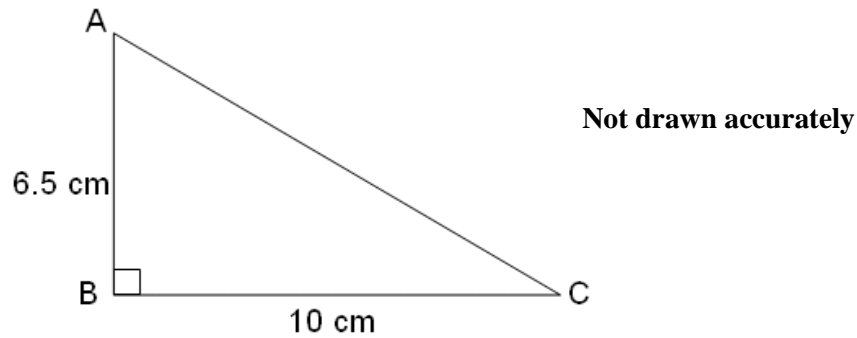
..... **15** ✓ (1) minutes

She ran home to arrive by 3:30pm.

d) Complete the distance time graph

(1)

12. Look at the right angled triangle below.



a) Make an accurate drawing of the triangle.

1. Draw 10 cm horizontal line at bottom of this area

2. From left of horizontal line draw 6.5 cm vertical line.

3. Join the end of the two lines together

(3)

b) Calculate the area of the triangle ABC.
Include the units in your answer

$$10 \times 6.5 = 65 \text{ Then halve it}$$

$$32.5 \text{ cm}^2$$

(3)

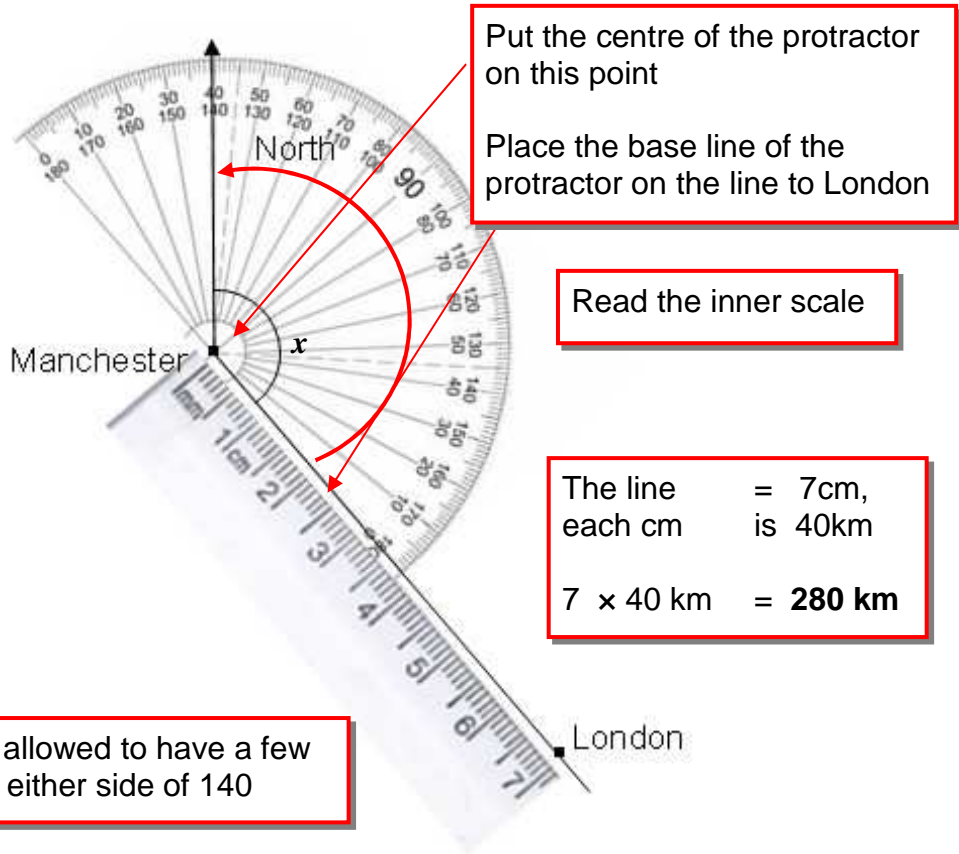
c) Work out the length of side AC to 2 decimal place

$$\begin{aligned} \text{Pythagoras theorem} \\ \text{Longest side}^2 &= 6.5^2 + 10^2 \\ &= 42.25 + 100 \\ \sqrt{142.25} &= 11.926 \end{aligned}$$

$$11.93 \text{ cm}$$

(3)

13. The scale drawing shows the positions of Manchester and London.



Put the centre of the protractor on this point
Place the base line of the protractor on the line to London

Read the inner scale

The line = 7cm,
each cm is 40km
 $7 \times 40 \text{ km} = 280 \text{ km}$

You are allowed to have a few degrees either side of 140

- a) From Manchester to London, the angle from north is angle x
Measure angle x accurately

..... **140** ° (1)

- b) On the scale drawing, 1cm represents 40km.
What is the distance, in km, from Manchester to London.

Measure the line in centimetres
Use the scale to change it to kilometres.

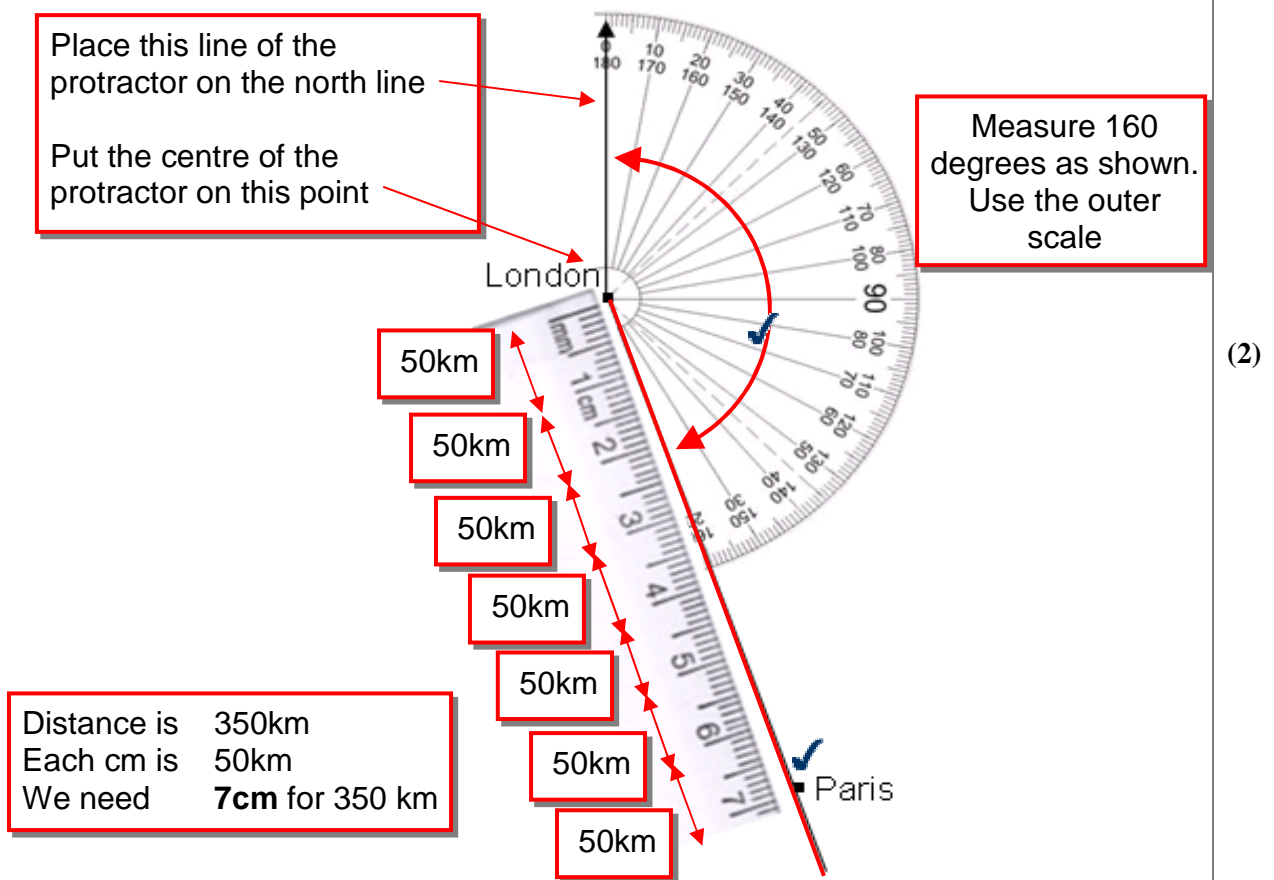
..... **280** km (2)

- c) From London to Paris, the angle from north is 160° clockwise.
Paris is 350km from London.

Show this information on a scale drawing.

Use the scale 1cm represents 50km.

The position of London is shown for you.



14. Use your calculator to work out the answers.

$$(58 + 47) \times (71 - 29)$$

$$105 \times 42$$

4410 ✓

(2)

$$\frac{58 + 47}{71 - 29}$$

$$105 \div 42$$

2.5 ✓

(2)

15. What is $\frac{1}{6} + \frac{7}{12}$

Give your answer as simply as possible

$$\frac{1}{6} + \frac{7}{12} = \frac{2}{12} + \frac{7}{12} = \frac{9}{12}$$

$\frac{3}{4}$ ✓

(2)

b) What is $\frac{2}{5}$ as a percentage

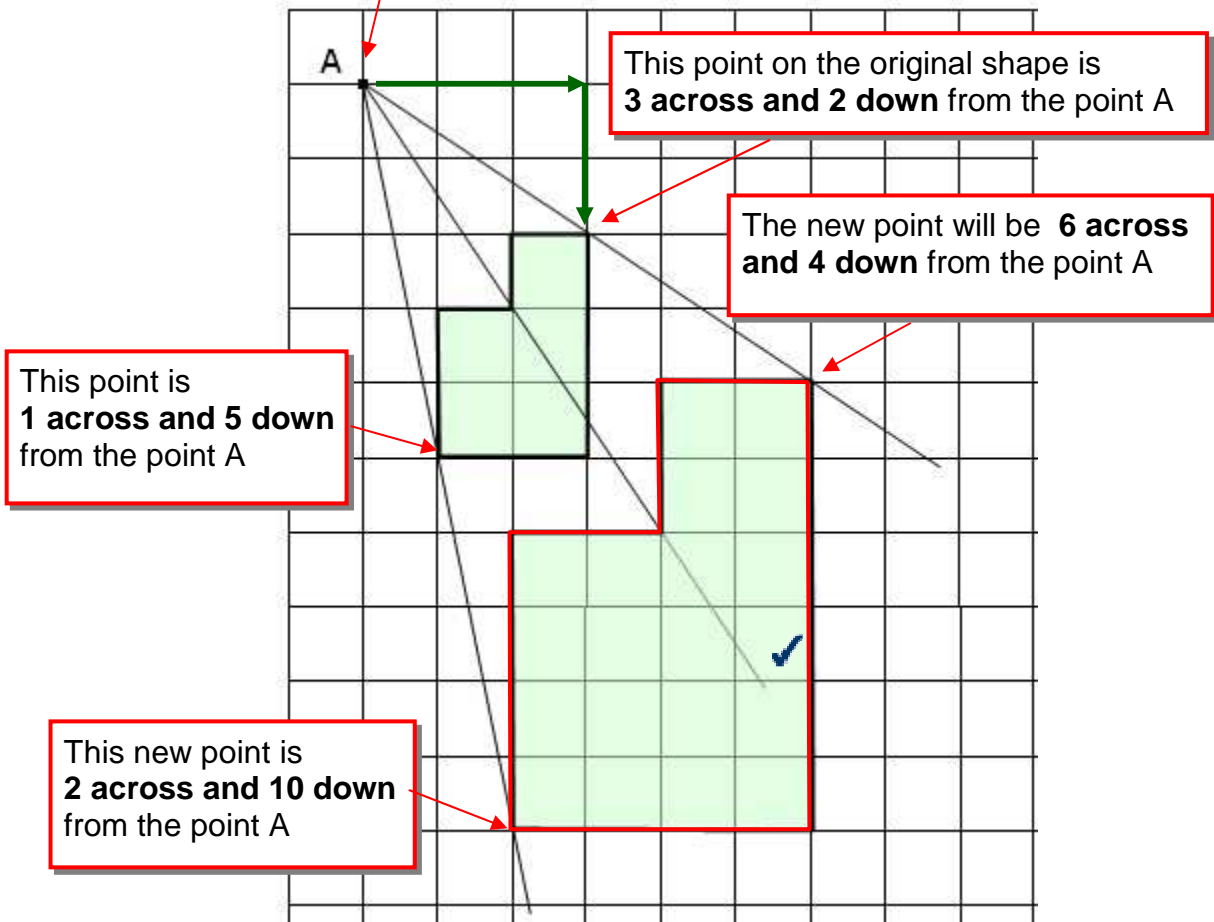
40 ✓

%

(1)

15. Look at the shape drawn on a square grid.
Draw an enlargement of this shape with scale factor 2
Use point A as the centre of enlargement.

Draw lines from this point through each point of the original shape



(3)

16. Here is some information about the people in a business.

A manager is going to choose someone at random.

	Man	Woman
Smoker	2	3
Non-smoker	12	13

(a) What is the probability that the person chosen will be a woman?

30 people in total

and 16 women

16 / 30
or
8 / 15

(1)

(b) What is the probability that the person will be a smoker?

There are 5 smokers

5 / 30
or
1 / 6

(1)

(c) The manager chooses someone at random.

This person is a smoker

What is the probability that this smoker is a man?

5 smokers in total

and 2 men smokers

2 / 5

(1)

17. Here is some information about the results of two tests.

	Test A	Test B
Number taking the test	80100	73250
Percentage getting top grade	22%	28%

How many more students gained top grade in Test B than in Test A?

$$80,100 \times 22\% = 17622$$

$$73,250 \times 28\% = 20510$$

$$20510 - 17622 = 2888$$

..... **2888** ✓

18. Look at this equation

$$x^3 - 5x = 30$$

The value for x is between 3 and 4

Use trial and improvement to find the value for x to **one decimal place**.

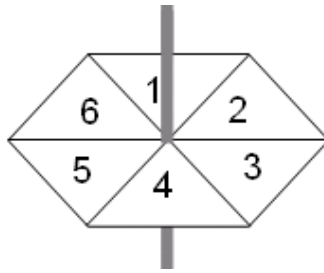
Show all your working. Use the table to help you.

x	x^3	$-5x$	=
3	27	-15	12 low
4	64	-20	44 high
3.5	42.88	-17.5	25.4 low
3.6	46.66	-18	28.66 low
3.7	50.65	-18.5	32.15 high

28.66 is closer to 30 than 32.15 so $x = 3.6$

$x =$ **3.6** ✓

19. a) What is the probability of getting a score of **2 or more** on a 6-sided spinner?



**Can score
2, 3, 4, 5 or 6**

5/6

(1)

There are **120** coins in a money bag.

The table shows the probability for randomly picking different coins out of the bag

Coins	5p	10p	20p	50p	£1
Probability	0.2	0.1		0.35	0.05

- b) What is the probability of picking a 20p coin

Probabilities add up to 1

$$1 - 0.2 - 0.1 - 0.35 - 0.05 = 0.3$$

0.3

(2)

- c) How many 5p coins are there in the bag

$$120 \times 0.2 = 24$$

24

(2)

20. a) Make x the subject of the formula

$$y = 3x - 6$$

$$y + 6 = 3x$$

$$\frac{y + 6}{3} = x$$

$x = \dots$

$$\frac{y + 6}{3}$$

(2)

- b) Find all the possible values of p if

$$-2 \leq p < 5$$

$\dots -2, -1, 0, 1, 2, 3, 4$

(2)

- c) Solve $5x - 20 = 2x + 16$

$$\begin{array}{l} \text{Take } 2x \text{ off both sides gives: } 3x - 20 = 16 \\ \text{Add 20 to both sides: } 3x = 36 \end{array}$$

$\dots 12$

(2)

21. The table shows distances, in miles, between six towns.

	Grimsby				
	36				
	78	Lincoln			
	61	72	Leeds		
	73	75	25	York	
		38	73	86	Nottingham
	161	156	96	90	161
					Newcastle

Go down from Lincoln and across from Nottingham

- a) How far is it from Lincoln to Nottingham

38 miles (1)

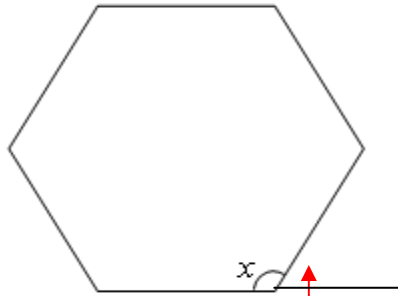
- b) Jane drives from Newcastle to York then continues to Grimsby.

How far is her complete journey

$$90 + 73 = 163$$

163 miles (2)

22. a) Calculate the size of an interior angle x of the regular shape below.
Show all your working



$$6 \text{ exterior angle} : 360^{\circ} \div 6 = 60$$

$$\text{interior angle} = 180^{\circ} - \text{exterior angle}$$

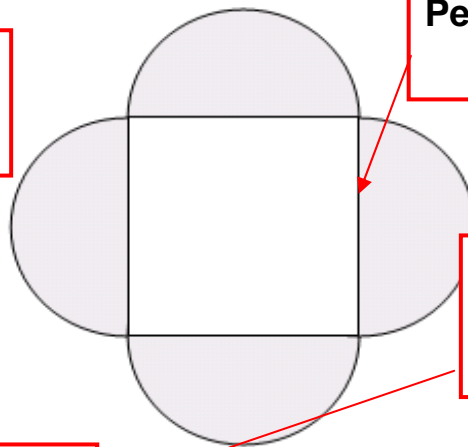
120 ✓

(2)

- b) The shape below is made by drawing semicircles on each of the sides of a square.
The perimeter of the square is 24 cm.
Calculate the shaded area.

4 half circles so
2 whole circles in
total

Perimeter square = 24cm
So side = 6cm



Circle has diameter
= 6cm
So radius $r = 3\text{cm}$

$$\text{Area 1 circle} = \pi r^2$$

$$\begin{aligned} \text{Area circle} &= \pi 3^2 \\ &= \pi \times 9 \\ &= 28.278 \end{aligned}$$

$$28.278 \times 2 \text{ circles} = 56.56$$

56.5 ✓

cm²

(4)