Paper 2 and Paper 3 Preparation Paper

AQA - Higher

High Chance

Corbettmaths

You will need a calculator

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this test

www.corbettmaths.com/contents

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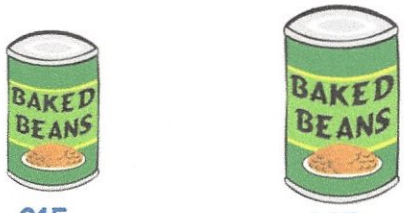
Q1

A supermarket sells Baked Beans in two different size cans.



215g
40p

395g
74p

Which size can is the best value for money?
You must show all your working.

40 ÷ 215 = 0.186p per gram

74 ÷ 395 = 0.187p per gram.

The 215g is best value.

(4)

Q2

(a) Write 5930000000 in standard form.

5.93×10^9

(1)

(b) Write 8.024×10^{-4} as an ordinary number.

0.0008024

(1)

(c) $c = 2 \times 10^6$ and $y = 6 \times 10^5$

$$w^2 = \frac{cy}{c - y}$$

Work out the value of w.
Give your answer in standard form correct to 2 significant figures.

$$w^2 = \frac{(2 \times 10^6) \times (6 \times 10^5)}{(2 \times 10^6) - (6 \times 10^5)}$$

$$w^2 = \frac{12 \times 10^{11}}{1400000} = 857142.8571$$

$w = 925.82...$

$w = 930$

9.3×10^2

(3)

Q3

Use your calculator to find

$$\sqrt{39.3^2 - 1.24^2}$$

(a) Give all the figures in your calculator display.

39.280432 79

.....

(1)

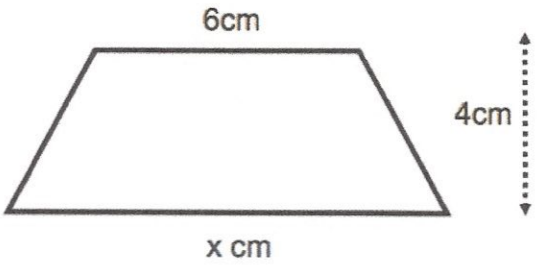
(b) Write your answer to 3 significant figures.

39.3

.....

(1)

4



The area of the trapezium is 34cm².

Work out the value of x.

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

$34 = \frac{1}{2}(6+x)4$

$68 = (6+x)4$

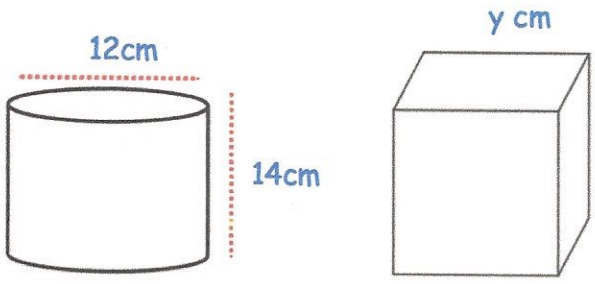
$17 = 6+x$

$x = 11$

11 .....cm

(2)

Q5



A cylinder has diameter 12cm and height 14cm.
A cube has side length y cm.
The cylinder and cube has the same volume.

Find y.

Cylinder

$V = \pi r^2 h$

$= \pi \times 6^2 \times 14$

$= 1583.362697 \text{ cm}^3$

Cube

$y \times y \times y = 1583.36...$

$\sqrt[3]{1583.36...} =$

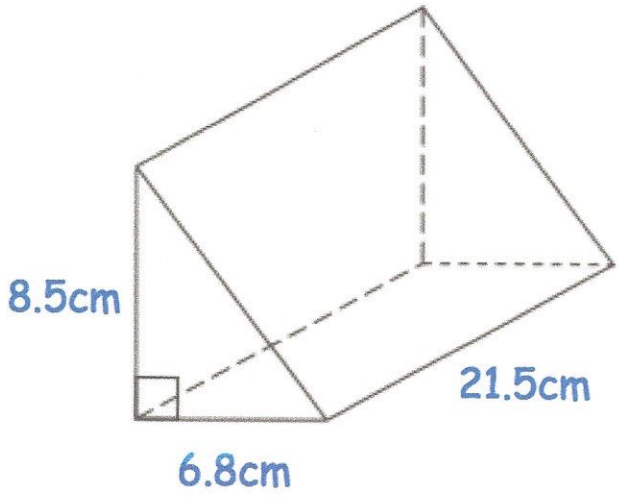
11.66

..... cm

(4)

Q6

Shown below is a triangular prism.



Find the volume of the triangular prism.

$V = \frac{1}{2} \times (6.8) \times (8.5) \times (21.5)$

$= 621.35$

621.35 .....cm³

(3)

Q7

100 people study one language at a college.

Some people study French.
Some people study Spanish.
The rest of the people study German.

54 of the people are male.
20 of the 29 people who study Spanish are female.
31 people study German.
15 females study French.

Work out the number of males who study German.

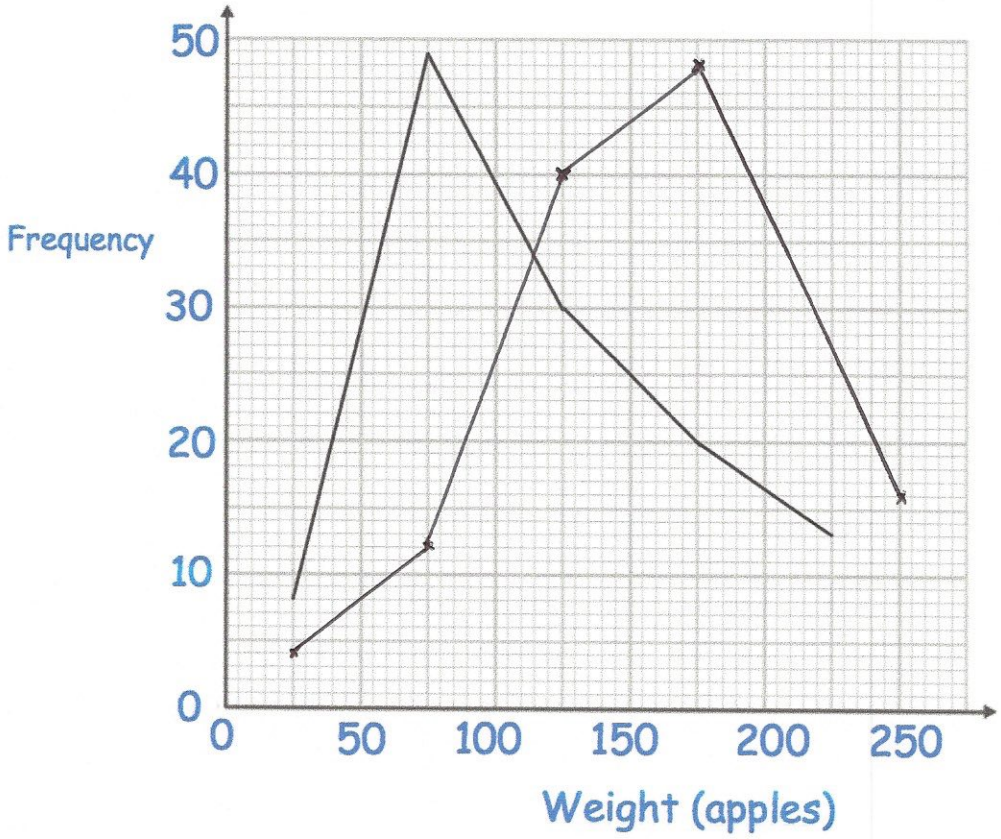
	Male	Female	Total
French	25	15	40
Spanish	9	20	29
German	20	11	31
Total	54	46	100

20

(4)

Q8

The frequency polygon shows the weights of 120 red apples.



The table shows the weights of 120 green apples.

Weight (kg)	Frequency
$0 < w \leq 50$	4
$50 < w \leq 100$	12
$100 < w \leq 150$	40
$150 < w \leq 200$	48
$200 < w \leq 250$	16

(a) Draw a frequency polygon to show this information on the diagram above.

(2)

(b) Compare the two distributions.

The weights of the green apples are higher/heavier than the red apples; the peak (mode) for the green apples is much further to the right.

(2)

9

$v = u + at$

Work out u when $v = 62$, $u = 250$ and $t = 8$

$62 = 250 + 8a$

$-188 = 8a$

$8a = -188$

$a = -23.5$

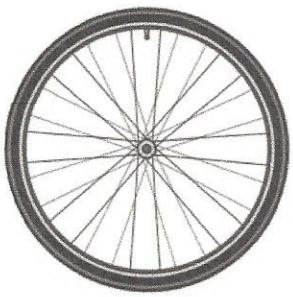
-23.5

.....

(3)

10

James has a bicycle.
Each wheel has diameter 45cm.



James cycles his bicycle in a straight line in the playground.
The front wheel makes 15 complete revolutions.

How far does the bicycle travel?
Give your answer in metres.

$\pi \times 45 = 141.37166\ldots$ cm.

$141.371\ldots \times 15 = 2120.575\ldots$ cm.

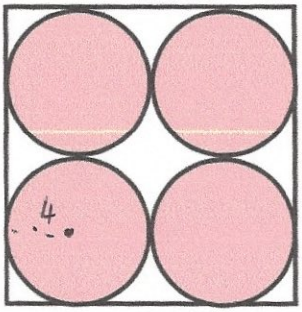
$\div 100$

21.206 .....m

(4)

11

A logo is designed that has four pink circles within a white square.



The square has side length 16cm.

Find the area of the logo that is white.

$\pi \times 4^2 = 50.265...$

$50.265... \times 4 = 201.0619...$

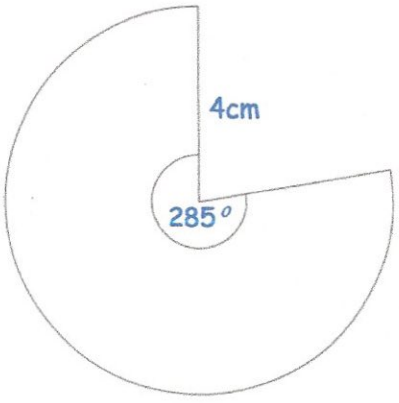
$16 \times 16 = 256$

$256 - 201.0619...$

54.94 .....cm²

(5)

12



Calculate the perimeter of the sector.

$\frac{285}{360} \times \pi \times 8 = 19.896\ldots$

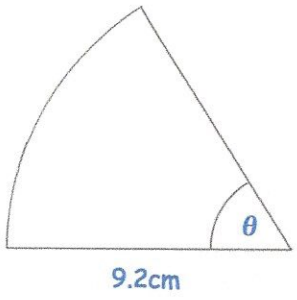
$19.896\ldots + 4 + 4 = 27.896\ldots$

27.897 cm

(3)

13

Shown is a sector of a circle with radius 9.2cm.



The area of the sector is 38.4cm²

Find the size of angle θ
Give your answer to 2 significant figures.

$\frac{\theta}{360} \times \pi \times 9.2^2 = 38.4$

$\frac{\theta}{360} \times 9.2^2 = 12.22...$

$\frac{\theta}{360} \times 84.64 = 12.22...$

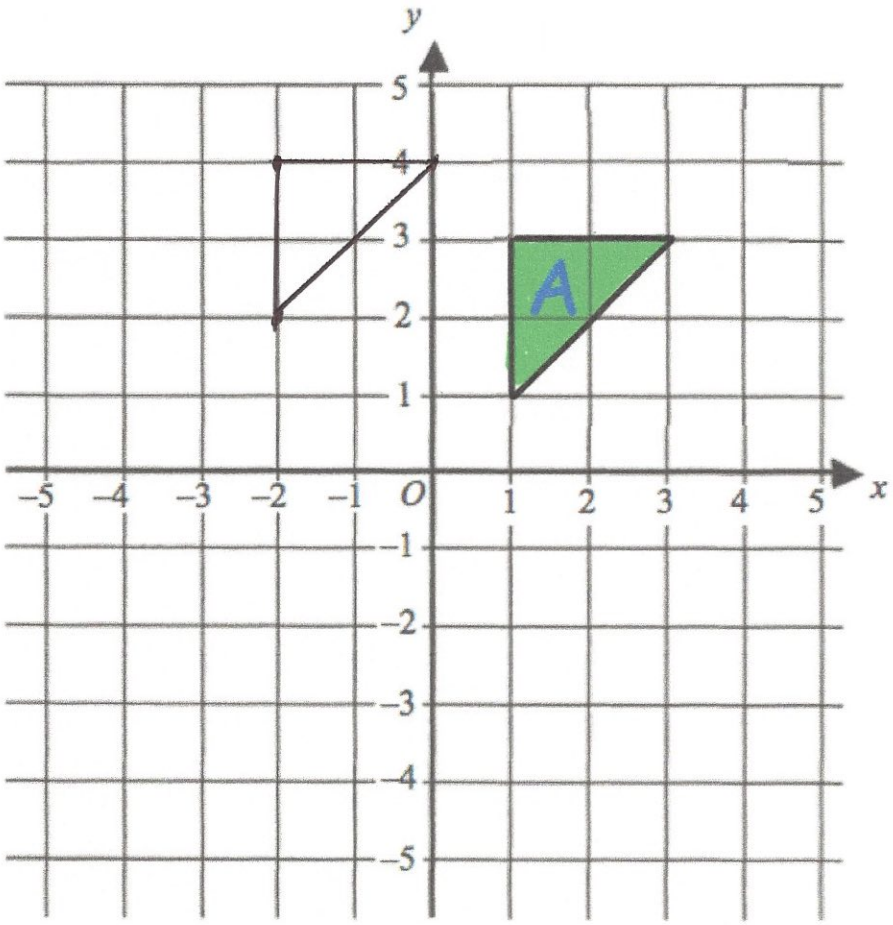
$\frac{\theta}{360} = 0.144...$

52

..... °

(3)

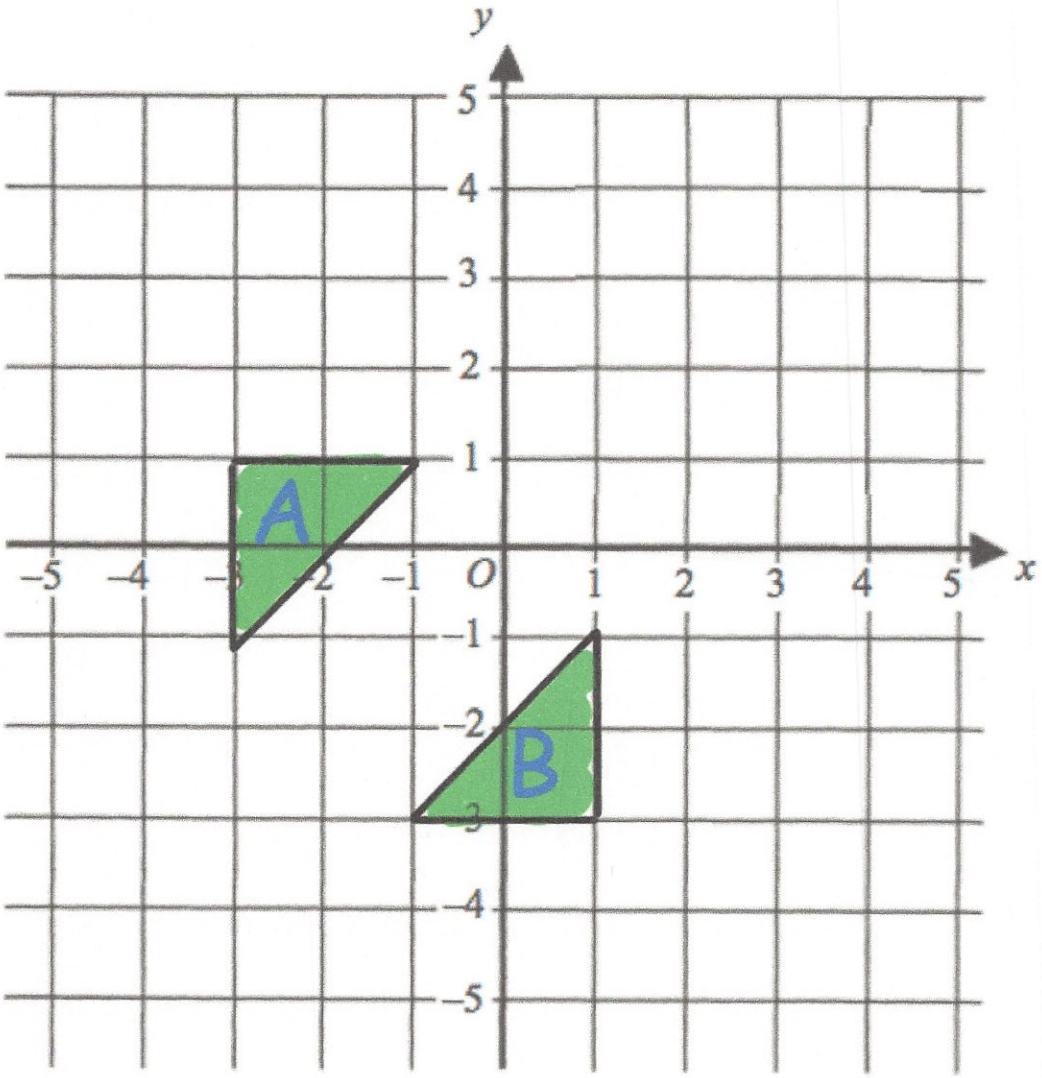
12



Translate triangle A by the vector $\begin{pmatrix} -3 \\ 1 \end{pmatrix}$

(2)

15



Describe fully the single transformation that maps triangle A onto triangle B.

A reflection with mirror line $y = x$

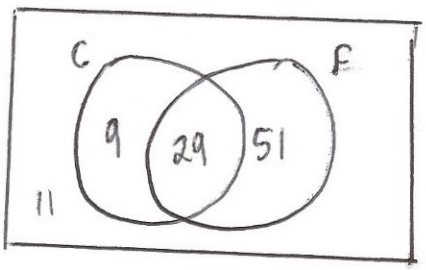
(2)

16

A group of friends have been surveyed.

38% have been to Canada.
80% have been to France.
11% have been to neither Canada or France.

(a) Find the percentage of the group that have been to Canada and France.



29 %

(4)

One of the group, who has visited Canada is picked at random.

(b) Find the probability that they have been to France.

29/38

(2)

17

Write $x^2 - 4x + 13$ in the form $(x + a)^2 + b$, where a and b are constants.

$(x-2)^2 - 4 + 13$

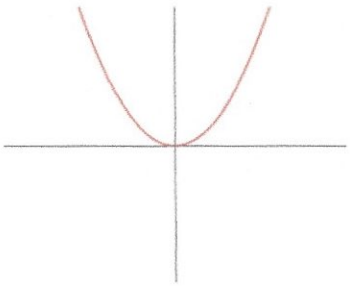
$(x-2)^2 + 9$

(3)

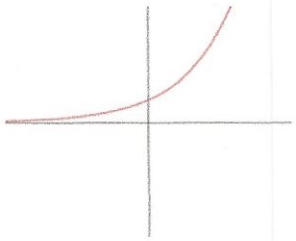
18

Match each graph to the correct equation

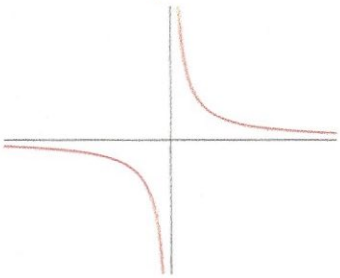
Graph A



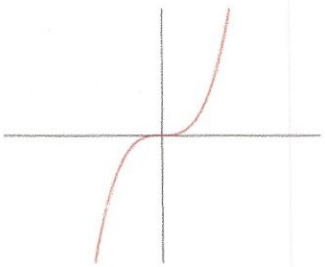
Graph B



Graph C



Graph D



$y = x^2$ is graph **A**

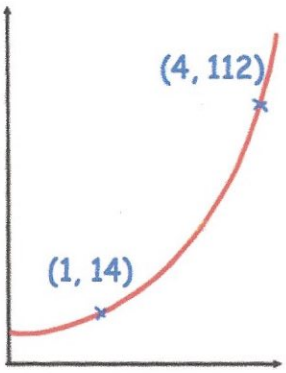
$y = x^3$ is graph ...D...

$y = 2^x$ is graph ...B...

$y = \frac{1}{x}$ is graph ...C...

(2)

19



The sketch shows a curve with equation
$y = ab^x$ where a and b are constants and $b > 0$

The curve passes through the points (1, 14) and (4, 112)

Calculate the value of a and b

$y = ab^x$

(1, 14) $\quad 14 = ab^1$

$14 = ab \quad (1)$

(4, 112) $\quad 112 = ab^4 \quad (2)$

$(2) \div (1)$

$\frac{112}{14} = \frac{ab^4}{ab}$

$b^3 = 8$

$b = 2$

$14 = a \times 2$

$a = 7$

a = 7

b = 2

(3)

20

Write the numbers below in order.
Start with the smallest.

$\frac{11}{23}$ $0.4\dot{7}\dot{2}$ $\frac{5}{11}$

0.47826...

0.4545...

$\frac{5}{11}$, $0.4\dot{7}\dot{2}$, $\frac{11}{23}$

(3)

21

An object is placed on a table.
It exerts a force of 22 newtons on the table.

The pressure on the table is 500 newtons/m².
Calculate the area of the crate that is in contact with the table.
Include suitable units.

$A = \frac{F}{P} = \frac{22}{500} = 0.044 m^2$ or $440 cm^2$

.....

(3)