Candidate surname	Other names

Maths Planner

Edexcel

2024 Practice Paper

Mathematics

PAPER 3 (Calculator)

Foundation Tier

Time 1 hour 30 minutes

Worked Written Solutions ✓

Total Marks

80

Q	Topic(s)	Marks
1	Metric Conversions	/ 1
2	Place Value	/ 1
3	FDP Conversions	/ 2
4	Simplifying / Expanding	/ 2
5	Fractions of Amounts	/ 1
6	Squares, Primes & Multiples	/ 2
7	Probability Scales	/ 3
8	Frequency Trees	/ 4
9	Ratio	/ 2
10	Mean from a List	/ 3
11	Names of Shapes	/ 3
12	Angles in Triangles / Equations	/ 3
13	Direct Proportion	/ 3
14	Volume of Cuboid	/ 3

Q	Topic(s)	Marks
15	Exchange Rates	/ 4
16	Pie Charts	/ 2
17	Plans and Elevations	/ 4
18	Angles in Parallel Lines	/ 2
19	Trigonometry	/ 2
20	Inequalities	/ 4
21	Scale Drawings / Bearings	/ 4
22	Circles	/ 3
23	Frequency Polygon	/ 2
24	Standard Form	/ 4
25	Combined Ratio	/ 3
26	Compound Interest	/ 4
27	Algebraic Manipulation	/ 7
28	Error Intervals	/ 2
29	Graphical Simultaneous Equations	/ 1

Marking Codes

Mark	What does it mean?
M1	**Method mark**. This mark is generally given for an appropriate method in the context of the question. *This mark is given for showing your working and may be awarded even if working is incorrect.*
A1	**Accuracy mark**. This mark is generally given for a correct answer following correct working.
B1	**Working mark**. This mark is usually given when working and the answer cannot easily be separated.
C1	**Communication mark.** This mark is given for explaining your answer or giving a conclusion in context supported by your working
P1	**Process Mark.** This mark is generally given for setting up an appropriate process to find a solution in the context of the question

Student Warning

The questions in this paper will not be in the exam

These topics are **not guaranteed** to show up in your Paper 3 exam. Please make sure to revise **all topic areas**, especially since topics covered in Paper 1 and Paper 2 can still come up.

These questions have been selected using analysis on previous official exam papers.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in you working.

1 Convert 1200 millimetres into centimetres.

💡 1cm = 10mm

1200÷10 = 120

120 ✓ B1 ..... cm

(Total marks for Question 1 is 1 mark)

---

2 Write down the value of the 7 in 3740

3740
0 0 0
0 0
0

✓ B1 700 or ✓ B1 seven hundreds

(Total marks for Question 2 is 1 mark)

---

3 (a) Write 4% as a decimal.

💡 % ÷ 100 = decimal

4÷100 = 0.04

0.04 ✓ B1

(1)

(b) Write 0.01 as fraction.

$0.01 = \frac{1}{100}$

$\frac{1}{100}$ ✓ B1

(1)

(Total marks for Question 3 is 2 marks)

---

4 (a) Simplify $x \times x \times x$

💡 $a^n \times a^m = a^{n+m}$

$x^1 \times x^1 \times x^1 = x^3$

x^3 ✓ B1

(1)

(b) Expand $2(3x - 11)$

$2 \times 3x = 6x$

$2 \times (-11) = -22$

$6x - 22$ ✓ B1

(1)

(Total marks for Question 4 is 2 mark)

---

5 Work out $\frac{2}{3}$ of 57

57 ÷ 3 = 19
19 x 2 = 38

or $\frac{2}{3} \times 57 = 38$

38 ✓ B1

(Total marks for Question 5 is 1 mark)

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6 (a) Write down a two-digit square number which is a multiple of 4.

Squares: 1, 4, 9, 16, 25, 36, 49, **64**, 81, ...

Multiples of 4: 4, 8, 12, ... 56, **64**, 68, ...

64 ✓ B1

.....

(1)

(b) Alma say,

"A prime number cannot be even, because any even number will be divisible by 2."

Show with a counter example that Alma is wrong.

(1)

2 is a prime number and even. ✓ C1

- The only factors of 2 are 1 and 'itself'.

(Total marks for Question 6 is 2 marks)

---

7 There are 20 counters in a bag. The table shows information about their colour.

Colour	Red	Blue	Green	Yellow
Frequency	5	3	6	6

✓ B1 (Both correct values)

There are the same number of green counters as yellow counters in the bag.

(a) Complete the table. $20-(5+3)=12$ $12\div 2=6$

(1)

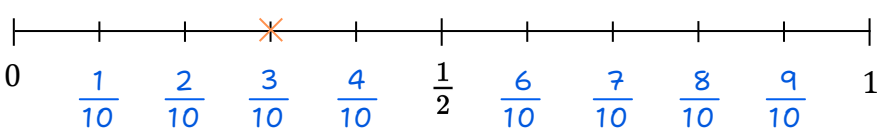
(b) A counter is selected at random from the bag.

Mark with a cross (X) on the scale below, the probability of the counter being green.

(2)

$P(\text{Green}) = \frac{6}{20} = \frac{3}{10}$ ✓ A1 (Correct probability)

✓ A2



(Total marks for Question 7 is 3 marks)

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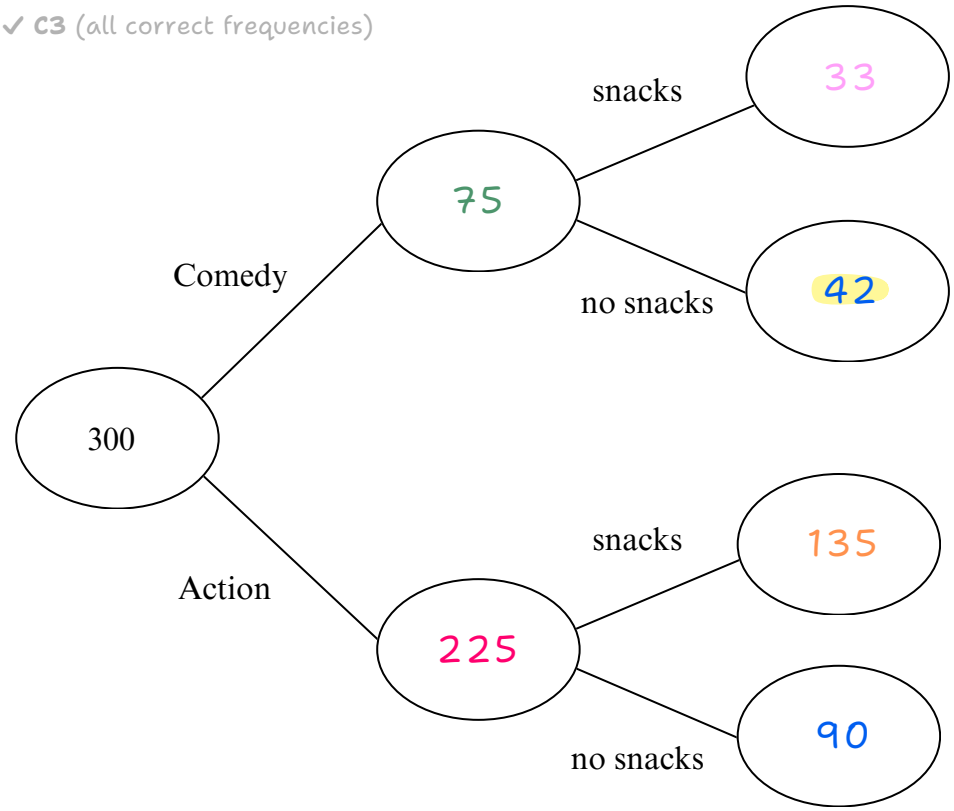
8 300 people attended the cinema to watch either a comedy or action movie.
25% watched a comedy movie. 300 ÷ 4 = 75 300 − 75 = 225
Of the people who watched an Action movie, three-fifths had snacks.
168 people had snacks in total. $\frac{3}{5} \times 225 = 135$

(a) Use this information to complete the frequency tree diagram below. **(3)**

✓ **C1** (2 correct frequencies)
✓ **C2** (3 or 4 correct frequencies)
✓ **C3** (all correct frequencies)

168 − 135 = 33



(b) One of the people is chosen at random.
Write down the probability that they watched a comedy movie with no snacks.

$\frac{42}{300}$ ✓ **B1**

.....

(1)

(Total marks for Question 8 is 4 marks)

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9 In a classroom, the ratio of boys to girls is 3 : 5

In the same classroom,
the ratio of students who prefer science to those who prefer art is 7 : 3

(a) Write the ratio of boys to girls in the form 1: n

B : G
3 : 5 ÷3
1 : $\frac{5}{3}$

✓ B1 ✓ B1 ✓ B1

1 : $\frac{5}{3}$ or 1 : $1\frac{2}{3}$ or 1 : 1.6

(1)

(b) Write the fraction of students who prefer art.

S : A total
7 : 3 10

∴ Art = $\frac{3}{10}$

$\frac{3}{10}$ ✓ B1

(1)

(Total marks for Question 9 is 2 marks)

---

10 Jona has five cards, each card has a number on them.
Three of the cards are hidden.

?	+	7	+	?	+	?	+	3	= 30
5				7		8			

The mode of the five numbers is 7.
The mean of the five numbers is 6.

Four of the numbers are prime, and one is cubed.

Work out the three hidden numbers.

💡 mode = most common

💡 primes: 2, 3, 5, 7, 11, ...

💡 cubes: 1, 8, 27, ...

💡 mean = sum of numbers ÷ how many numbers
💡 sum of numbers = mean x how many numbers

∴ There must be at least one more 7

∴ sum of numbers = 6 x 5
= 30

∴ 30 - (7+7+3) = 13

We need a prime + cube = 13
5 + 8 = 13

5 ✓ B1 , 7 ✓ B1 , 8 ✓ B1

(Total marks for Question 10 is 3 marks)

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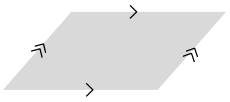
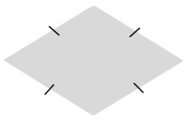
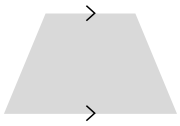
11 Complete the names of these quadrilaterals.

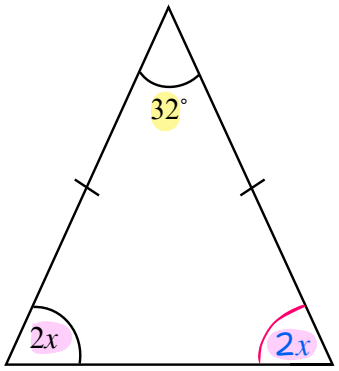
Shape	Name
	Parallelogram ✓ C1
	Rhombus ✓ C1
	Trapezium ✓ C1

(Total marks for Question 11 is 3 marks)

---

12 Here is a triangle.

💡 Angles in triangles sum to 180°



💡 Isosceles triangles have equal base angles.

Work out the value of x.

$\therefore 2x + 2x + 32 = 180$ ✓ P1

$4x + 32 = 180$ (−32 ↓ / −32 ↓)

$4x = 148$ (÷4 ↓ / ÷4 ↓)

$x = 37$

$x =$ 37 ✓ A1

(Total marks for Question 12 is 3 marks)

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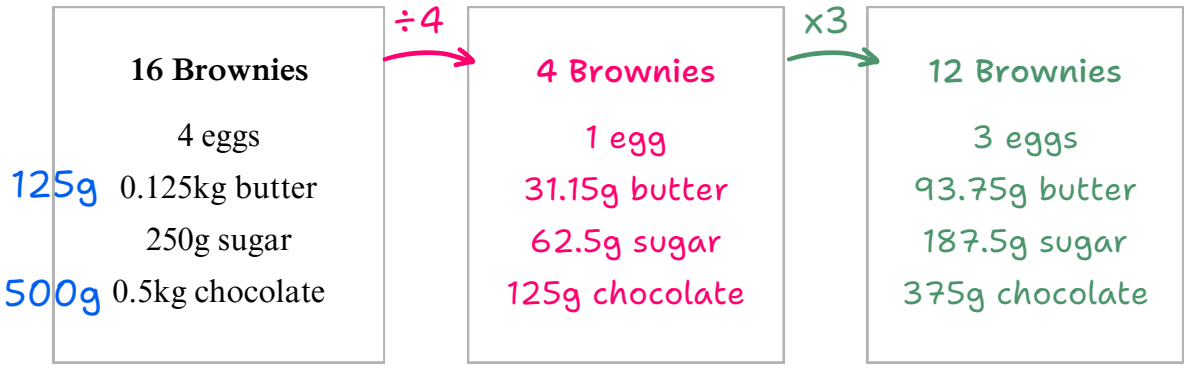
13 Here is the recipe to make 16 chocolate brownies.



Work out how much of each ingredient needed to make 12 brownies.
Give your answers in grams.

💡 1kg = 1000g

✓ **M1** (Attempt to find ingredients as proportion of 16 brownies)

✓ **A1** (At least 2 correct values)
✓ **A2** (All 4 correct values)

eggs ..... 3 .....

butter ..... 93.75 ..... g

sugar ..... 187.5 ..... g

chocolate ..... 375 ..... g

(Total marks for Question 13 is 3 marks)

3F24

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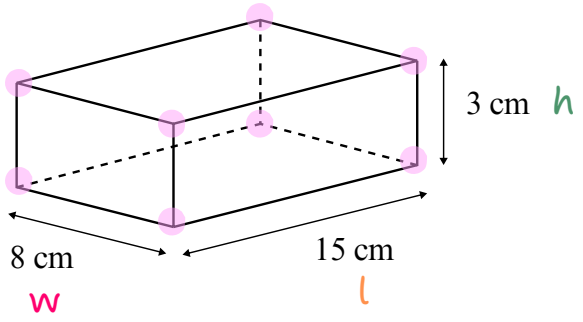
14 Here is a cuboid.



(a) Write down the number of vertices this cuboid has.

💡 Vertices = corners

8 ✓ C1

.....

(1)

(b) Work out the volume of this cuboid.

💡 Volume = l x w x h

Volume = 15 x 8 x 3 ✓ M1

= 360

360 ✓ A1 cm³

.....

(2)

(Total marks for Question 14 is 3 marks)

---

15 Harry has £3,050 saved.
He is going to use 30% of this money to take on holiday.

💡 30% Multiplier: x0.30

£3050 x 0.30 = £915 ✓ M1

Harry will need to convert these Pounds (£) into Euros (€).

£1 = €1.17

(a) Work out how many Euros (€) Harry will be taking on holiday.

x 915 ↓ £1 = €1.17 ↓ x 915

£915 = €1070.55

€ 1070.55 ✓ A1

.....

(2)

While on holiday, Harry spends €800.

(b) Out of the money he took, work out how many Pounds (£) Harry will have left once he returns home.

1070.55 - 800 = €270.55 ✓ M1

£1 = €1.17 ← ÷1.17

∴ Amount left = 270.55 ÷ 1.17

= 231.2393...

£ 231.24 ✓ A1

.....

(2)

(Total marks for Question 15 is 4 marks)

3F24

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16 The table shows the favourite fruits of a group of 90 students.

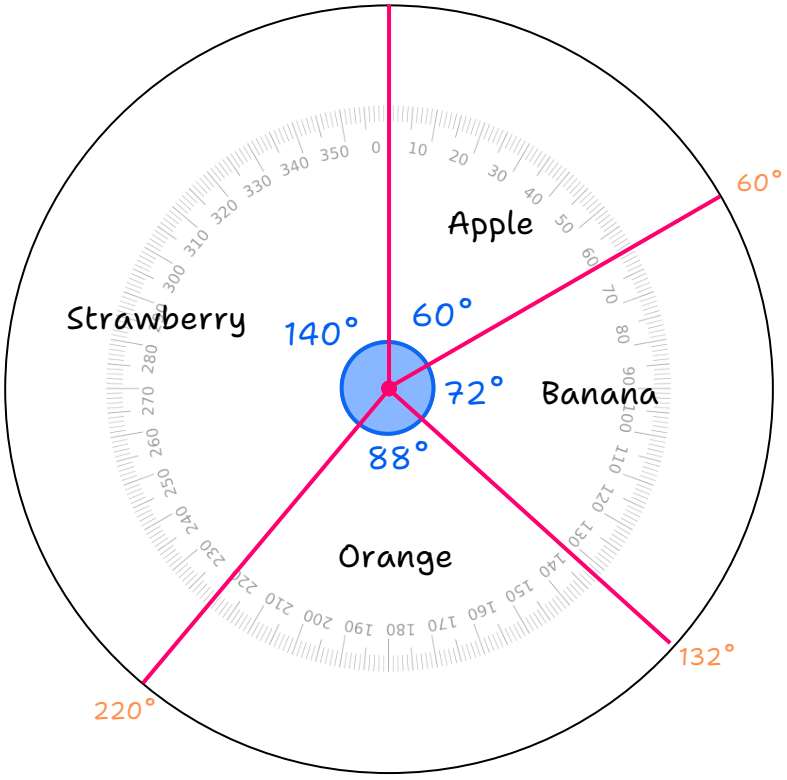
Fruit	Frequency		Angle
Apple	15	x4 =	60°
Banana	18	x4 =	72°
Orange	22	x4 =	88°
Strawberry	35	x4 =	140°
	90		360°

60°
132°
220°
360°

x4

✓ M1 (to find angles)

Draw an accurate pie chart to represent this information.



✓ A1 (At least one correct drawn & labelled sector)

✓ A2 (fully complete correct & labelled pie chart)

(Total marks for Question 16 is 3 marks)

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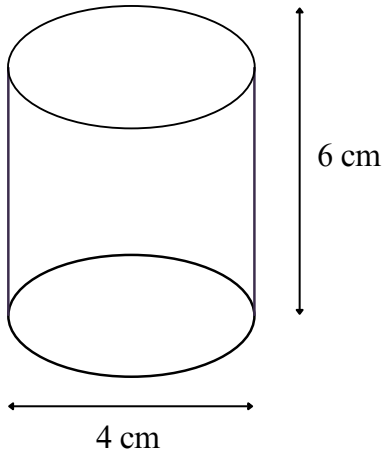
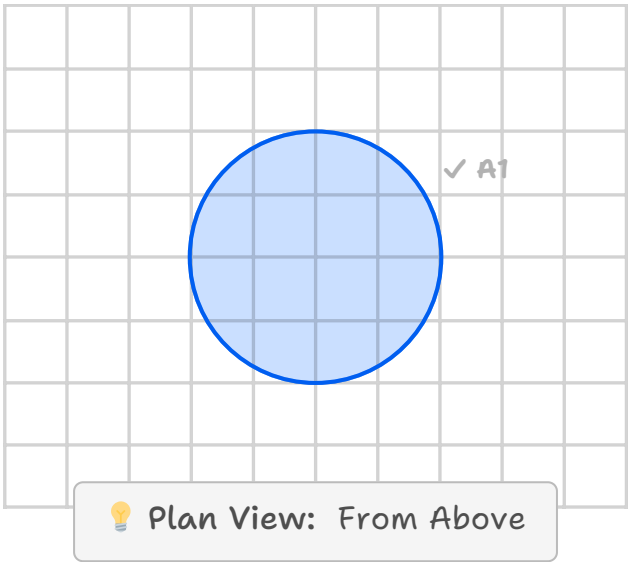
17 (a) On the centimetre grid below, draw a plan view of this cylinder.

(1)

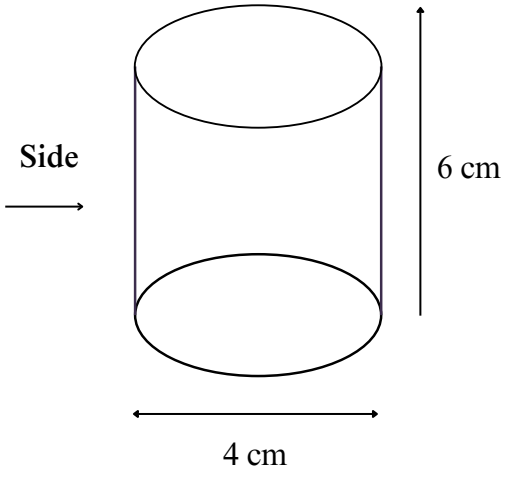


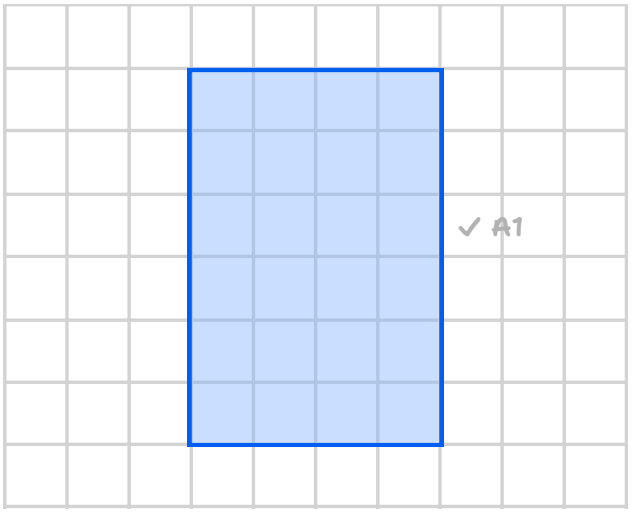


Diameter = 4cm
Radius = 4÷2 = 2cm

(1)

(b) On the centimetre grid below, draw a side view of this cylinder.





(Total marks for Question 17 is 2 marks)

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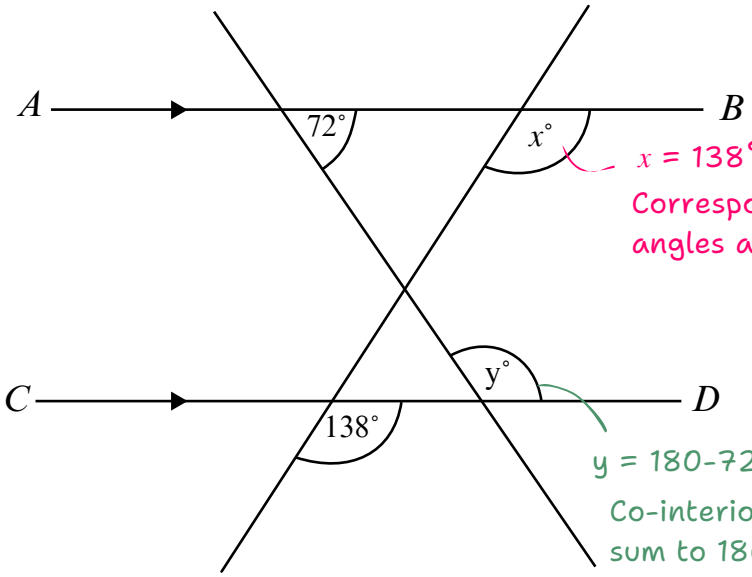
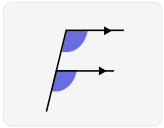
18 AB and BC are parallel lines.

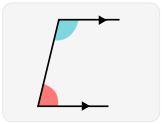
Not drawn accurately



$x = 138°$
Corresponding angles are equal



$y = 180-72 = 108°$
Co-interior angles sum to 180°



(a) Work out the size of angle x.

138 ✓ B1 °

(1)

(b) Give a reason for your answer.

Corresponding angles are equal ✓ C1

(1)

(c) Work out the size of angle y.

$y = 180-72 = 108°$

108 ✓ B1 °

(1)

(d) Give a reason for your answer.

Co-interior angles sum to 180° ✓ C1

(1)

(Total marks for Question 18 is 4 marks)

3F24

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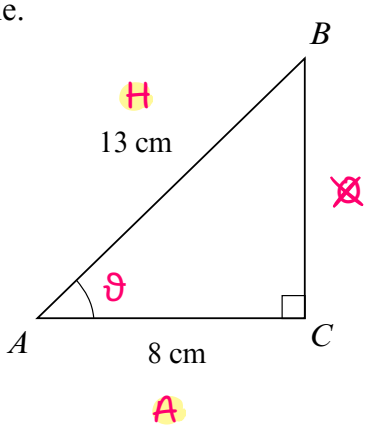
19 Here is a right-angled triangle.



Work out the size of angle BAC
Give your answer correct to 2 significant figures

S°H C^A^H T°A

$\cos(\vartheta) = \frac{8}{13}$ ✓ P1 (with correct trig ratio)

$\cos\vartheta = \frac{A}{H}$

$\vartheta = \cos^{-1}\left(\frac{8}{13}\right)$

$= 52.020127\ldots$

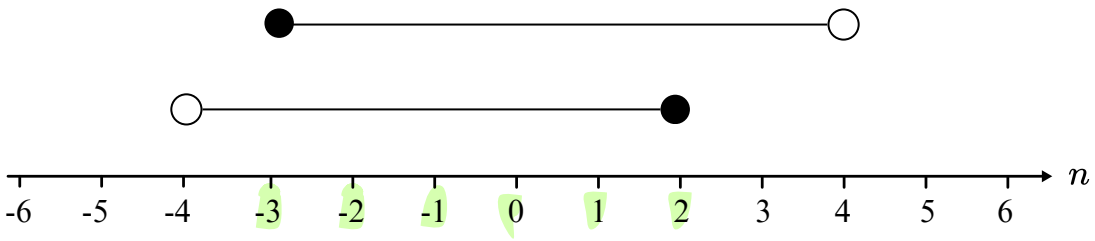
52 ✓ A1 °

(Total marks for Question 19 is 2 marks)

20 Here is a number line.

< > ○ excluded

≤ ≥ ● included



Write the integer values that satisfy both inequalities shown on the number line.

Integer: Whole number

✓ A1 (for at least 3 correct values, with only 1 incorrect)
✓ A2 (for all correct values)

$n = -3, -2, -1, 0, 1, 2$

(Total marks for Question 20 is 2 marks)

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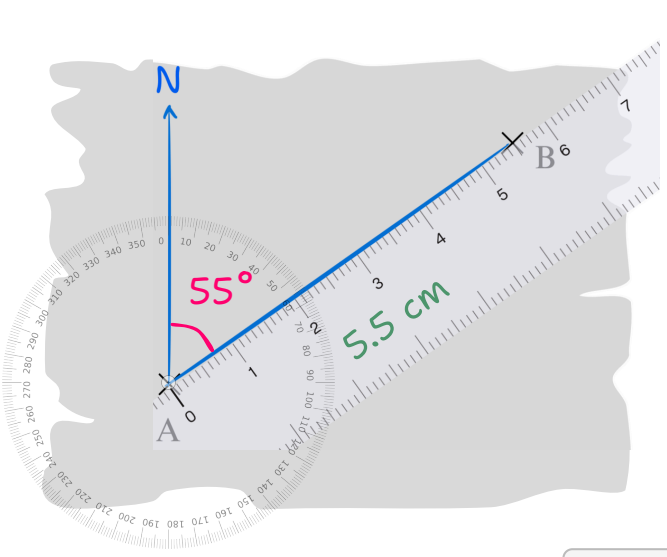
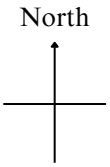
21 Town A and B are shown on a scale map.





Scale 1 : 200,000

(a) Work out the real distance between Town A and B.
Give your answer in metres.

💡 1cm : 200,000cm

💡 1m = 100cm

Map : Real Life ✓ M1

x 5.5 ↓ 1 : 200,000 ↓ x 5.5

5.5 : 1,100,000 cm

✓ A1 (Accept values in range: 10,200 – 11,400)

∴ 1,100,000 ÷ 100 = 11000m

11,000 ..... m

(2)

(b) Work out the bearing of Town B from A.

💡 Measure from north line
💡 Measure clockwise ↻
💡 Give answer in 3-digits

✓ M1 (Attempt to measure clockwise from A)

055 .....°

(2)

(Total marks for Question 21 is 4 marks)

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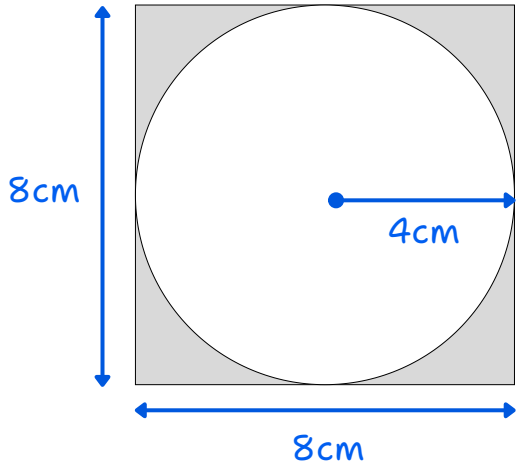
22 Here is a circle inside a square.



Area = π x r²

Area = b x h

The square has a side length of 8 cm.

Work out the area of the shaded region.

Give your answer correct to 1 decimal place.

Area = π x r²

= π x (4)²

= 16π ✓ B1

Area = b x h

= 8 x 8

= 64

∴ Shaded Area = Area of Square – Area of Circle ✓ P1

= 64 – 16π

= 13.73451754

13.7 ✓ A1 ..... cm²

(Total marks for Question 22 is 3 marks)

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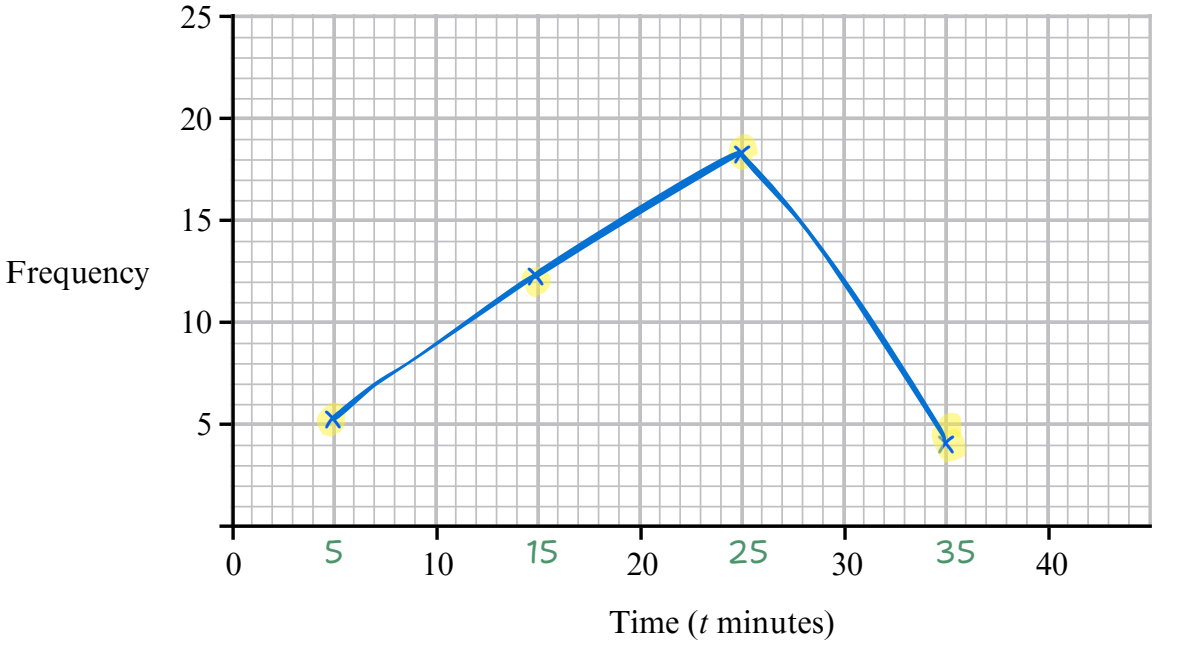
23 The frequency table gives information about the time taken for workers to drive work.

Time (t minutes)	Frequency	mp
$0 < t \leq 10$	5	5
$10 < t \leq 20$	13	15
$20 < t \leq 30$	18	25
$30 < t \leq 40$	4	35

On the grid, draw a frequency polygon for the information in the table.

✓ **B2** (all points correct with lines) ✓ **B1** (all correct points, no lines)



(Total marks for Question 23 is 2 marks)

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24 (a) Write 5×10^{-5} as an ordinary number.

0.00005.0

0.00005

0.00005 ✓ B1

(1)

(b) Write 830×10^{6} in standard form.

830000000.

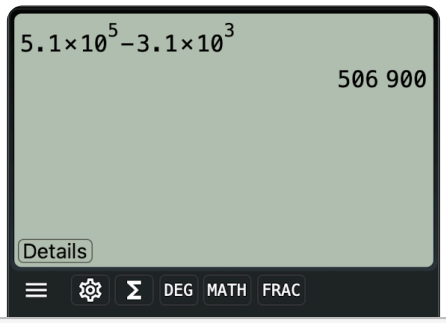
8.30000000

8.3×10^{8} ✓ B1

(1)

(c) Work out $5.1 \times 10^{5} - 3.1 \times 10^{3}$

Give your answer in standard form.



You can input into your calculator

506900 ✓ P1

5.06900

5.069×10^{5} ✓ A1

(2)

(Total marks for Question 24 is 4 marks)

---

25 Given $x : y = 4 : 5$ and $\frac{x}{w} = \frac{7}{3}$

find the ratio $x : y : w$ in its simplest form.

$x : y : w$

×7 $4 : 5$

✓ M1 $7 : \ : 3$ ×4

28 : 35 : 12

💡 They have 'x', we can use this fact to link the two ratios!

4 × 7 = 28

✓ A1 (at least 2 correct values)

✓ A2 (all three values correct)

28 : 35 : 12

(Total marks for Question 25 is 3 marks)

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26 Henry invests £x in Moomoo Investments for 4 years.
Chloe invests £x in Trading 414 for 2 years.

💡 They both invest x, so we need to find x!

MooMoo Investments
Compound Interest
3% per annum for the **first** two years 1.8% per annum for each extra year

Trading 414
Compound Interest
5% per annum

At the end of the 4 years, Henry's investment is valued at £54,971.81
Work out the value of Chloe's investment at the end of the 2 years.
Give your answer to the nearest penny.

Compound Interest

$P \times \left(1 + \frac{r}{100}\right)^n$ P = starting amount, r = interest rate, n = number of years

Compound Multipliers

$1 + \frac{3}{100} = 1.03$

$1 + \frac{1.8}{100} = 1.018$

$1 + \frac{5}{100} = 1.05$

MooMoo (Henry)

$x \times 1.03^2 \times 1.018^2 = 54{,}971.81$

$x = \frac{54{,}971.81}{1.03^2 \times 1.018^2}$ ✓ P1

$= 50{,}000.00311$

$\approx$ £50,000 ✓ A1

Trading 414 (Chloe)

$50{,}000 \times 1.05^2 =$ £55,125 ✓ M1

£ 55,125 ✓ A1

(Total marks for Question 26 is 4 marks)

27 (a) Factorise $3x^2 + 12xy$ $3x^2+12xy$

💡 Find the HCF of numbers and letters

✓ A1 (for one correct factor)
✓ A2 (for both correct factors)

$3x(x+4y)$

(2)

(b) $a = 2b + c^2$

Make b the subject.

$a = 2b + c^2$

$-c^2$ ↓ ↓ $-c^2$ ✓ M1

$a - c^2 = 2b$

$\div 2$ ↓ ↓ $\div 2$

$\frac{a - c^2}{2} = b$

✓ A1

$b = \frac{a - c^2}{2}$ or $b = \frac{c^2 - a}{-2}$

(2)

(c) Simplify $a^2 \times a \times a^{-5}$

💡 $a^n \times a^m = a^{n+m}$

$a^2 \times a^1 \times a^{-5} = a^{-2}$

a^{-2} ✓ B1

(1)

(d) Simplify $\frac{(4wc^3)^3}{8wc}$

$\frac{(4wc^3)^3}{8wc} = \frac{4^3w^3c^9}{8wc}$ ✓ M1

💡 $(a^n)^m = a^{nm}$

💡 $a^n \div a^m = a^{n-m}$

$= \frac{64w^3c^9}{8w^1c^1} = 8w^2c^8$ ✓ M1

$64 \div 8 = 8$

$8w^2c^8$ ✓ A1

(3)

(Total marks for Question 27 is 7 marks)

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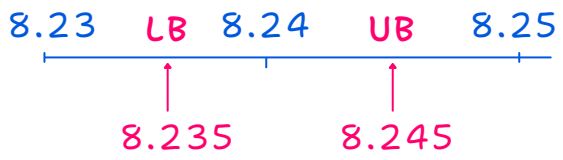
28 The number, n, is rounded to 2 decimal places.

The result is 8.24

Complete the error interval for n.

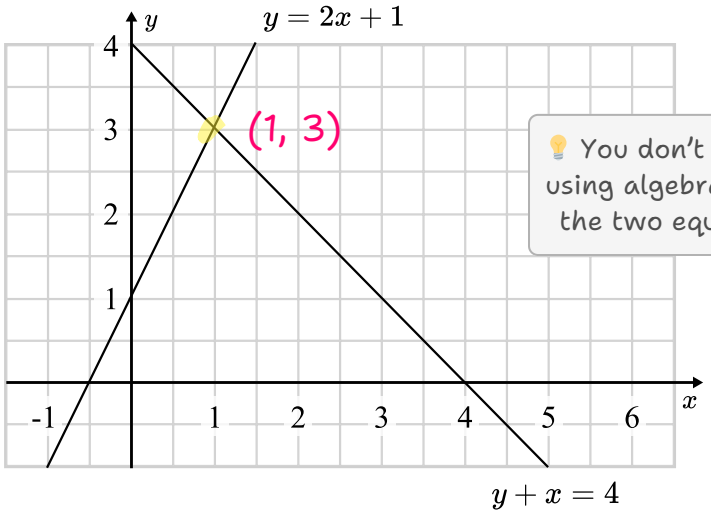


✓ B1 ✓ B1

8.235 $\leq n <$ 8.245

(Total marks for Question 28 is 2 marks)

29



You don't need to solve this using algebra! Just find where the two equations intercept!

Use these graphs to solve the simultaneous equations

$$y = 2x + 1$$

$$y + x = 4$$

✓ B1 (both correct)

$x =$ 1

$y =$ 3

(Total marks for Question 29 is 1 mark)

TOTAL FOR PAPER IS 80 MARKS

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