Candidate surname	Other names

Maths Planner

Edexcel

2024 Practice Paper

Mathematics

PAPER 2 (Calculator)

Foundation Tier

Time 1 hour 30 minutes

Worked Written Solutions ✓

Total Marks

80

Q	Topic(s)	Marks
1	Converting Metric Units	/ 1
2	Names of Polygons	/ 1
3	FDP Conversion	/ 1
4	Circle Properties	/ 1
5	Percentages of Amounts	/ 1
6	Simplifying Expressions	/ 3
7	Time Calculations	/ 2
8	Writing as a Percentage	/ 2
9	Ratio 1:n / Sharing Ratio	/ 4
10	Direct Proportion	/ 4
11	Averages	/ 3
12	Money Problem	/ 4
13	Probability	/ 5
14	Area and Perimeter	/ 4

Q	Topic(s)	Marks
15	Transformations: Reflection	/ 2
16	Using your Calculator / Rounding	/ 3
17	Area of Circles	/ 3
18	Volume of Prism	/ 3
19	Scatter Graphs	/ 2
20	Calculating with Speed	/ 3
21	Angles in Polygons	/ 3
22	Trigonometry	/ 2
23	Lowest Common Multiple (LCM)	/ 2
24	Standard Form	/ 3
25	Compound Interest	/ 4
26	Probability / Ratio	/ 4
27	Quadratic Graphs	/ 4
28	Upper and Lower Bounds / Indice Laws	/ 6

Maths Planner

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 2 exam. Please make sure to revise **all topic areas**, especially since topics covered in Paper 1 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 240 centimetres to metres.

1m = 100 cm

240 ÷ 100 =2.4

2.4 ✓ B1 ..... m

(Total marks for Question 1 is 1 mark)

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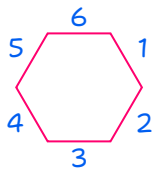
2 How many sides does a Hexagon have?



6 ✓ B1

(Total marks for Question 2 is 1 mark)

---

3 Write $\frac{7}{8}$ as a decimal.

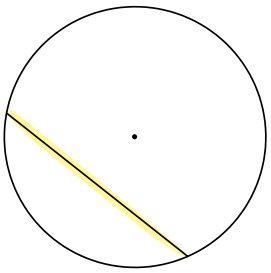
7 ÷ 8 = 0.875

0.875 ✓ B1

(Total marks for Question 3 is 1 mark)

---

4 Write down the mathematical name for the line shown below.



Chord ✓ B1

(Total marks for Question 4 is 1 mark)

---

5 Find 15% of 32

% Multiplier

15 ÷ 100 = 0.15

32 x 0.15 = 4.8

4.8 ✓ B1

(Total marks for Question 5 is 1 mark)

1F24

6 (a) Simplify $5t \times 2tp$

5x2 = 10

txtp = t^2p

$10t^2p$ ✓ B1

.....

(1)

(b) Simplify $8x + y - 3x + y$

8x - 3x = 5x

1y + 1y = 2y

✓ B1 ✓ B1

$5x + 2y$

.....

(2)

(Total marks for Question 6 is 3 marks)

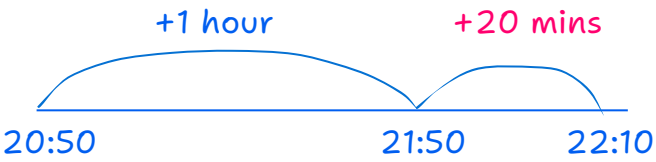
---

7 A movie starts at 20:50

It runs for $1\frac{1}{3}$ hours.

What time does the movie end?

$\frac{1}{3}$ of 60 = 20 minutes ✓ M1



Accept: 10:10pm

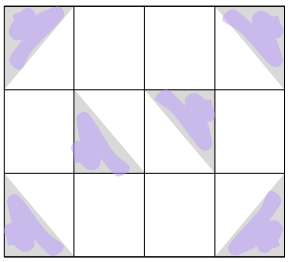
22:10 ✓ A1

.....

(Total marks for Question 7 is 2 marks)

---

8 Here is a shaded grid.



3x4 =12 total rectangles

Work out the percentage of the grid that is **unshaded**.

3 shaded rectangles

12 - 3 = 9 unshaded

✓ M1

$\frac{9}{12} = \frac{3}{4} = 75\%$ ($\frac{3}{4} \times 100 = 75$)

75 ✓ A1 %

.....

(Total marks for Question 8 is 2 marks)

---

9 (a) Write 8 : 12 in the form 1 : *n*

÷8 ↓ 8 : 12 → 1 : $\frac{12}{8}$ ↓ ÷8

Accept the forms:

✓ B1 $1 : \frac{12}{8}$ ✓ B1 $1 : \frac{3}{2}$ ✓ B1 1 : 1.5

(1)

(b) Tony and Sarah have money saved in the ratio 7 : 11

Sarah has saved £24 more than Tony.

Work out how much they have saved in total.

÷4 ↓ 4 parts = £24 → 1 part = £6 ↓ ÷4 ✓ M1

+4 more parts

T : S	Total
7 : 11	18
42 : 66	108

x6 ↓ ↓ x6 ✓ M1

£ 108 ✓ A1

(3)

(Total marks for Question 9 is 4 marks)

---

10 At a butchers

5kg of chicken costs £57.

2kg of chicken and 800g of beef steak cost £41.20.

Work out the total cost for 500g of chicken and 1.5kg of beef steak.

1.5kg = 1500g

Chicken:

÷5 ↓ 5kg = £57 → 1kg = £11.40 ↓ x2 ✓ M1

x2 ↓ 2kg = £22.80

÷2 ↓ 1kg = £11.40 → 500g = £5.70 ↓ ÷2

41.20 - 22.80 = £18.40 ✓ M1

∴ 500g (chicken) + 1.5kg (beef):

5.70 + 34.50 = £40.20

Beef:

÷8 ↓ 800g = £18.40 → 100g = £2.30 ↓ x15 ✓ M1

x15 ↓ 1500g = £34.50

£ 40.20 ✓ A1

(Total marks for Question 10 is 4 marks)

2F24

11 For a set of five numbers,

the median is 7

the mode is 4

the range is 9

three of the numbers are prime

median = middle (in order)
mode = most common
range = biggest – smallest

Primes:
2, 3, 5, ~~7~~, 11, 13, 17, 19, ...

Work out the **only** possible set of five numbers.

4+9 = 13

✓ A1 (for at least 2 correct values)
✓ A2 (for 3 correct values)
✓ A3 (for all correct values)

4 ..... 4 ..... 7 ..... 11 ..... 13 .....

There need to be at least two 4's

middle

This prime needs to be >7 & <13

(Total marks for Question 11 is 3 marks)

---

12 A group of three friends went on holiday.
The total cost for all three was £3600.

32% was spent on flights

$\frac{2}{5}$ was spent on hotels

the remainder was spending money

Given the costs were split equally between them,
Work out how much spending money each friend had.

% Multiplier

32 ÷ 100 = 0.32

Flights:

3600 x 0.32 = £1152 ✓ M1

Hotels:

$\frac{2}{5}$ x 3600 = 1440 ✓ M1

Total Spending Money:

3600 – (1440 + 1152)

= £1008

Spending Money per Person:

= £1008 ÷ 3 ✓ M1

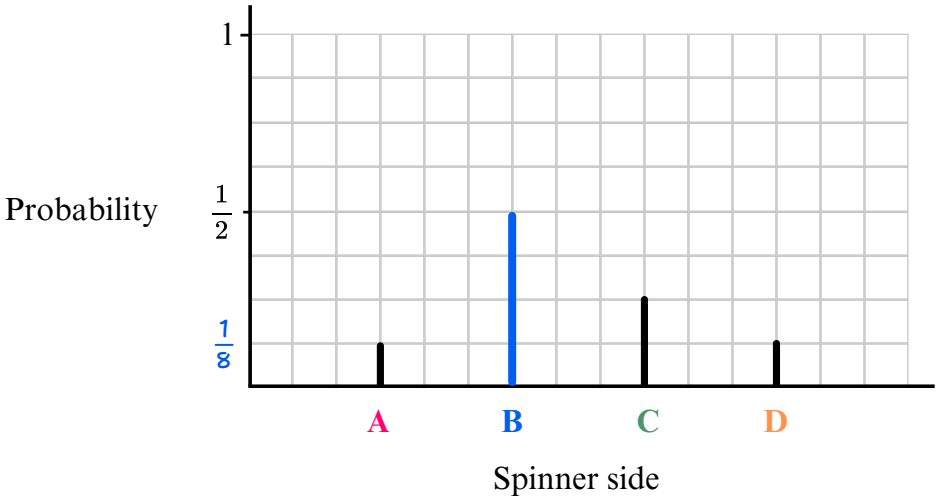
= £336

£ 336 ✓ A1

(Total marks for Question 12 is 4 marks)

2F24

13 A 4-sided biased spinner can land on either **A**, **B**, **C** or **D**.
The probabilities are shown on the chart below.



P(A) = 1/8

P(C) = 2/8

P(D) = 1/8

(a) Write down the probability the spinner will land on **D**.

✓ B1 ✓ B1

1/8 = 0.125

(1)

(b) Complete the chart for spinner side **B**.

P(C) = 1 − (1/8 + 2/8 + 1/8) = 1/2 ✓ M1 ✓ A1 (for correct line on chart)

(2)

(c) The spinner will be spun 28 times.
How many times is the spinner expected to land on **C**?

Expected Outcome = probability x number of trials

P(C) = 2/8 = 1/4

✓ M1

Expected = 1/4 x 28 = 7

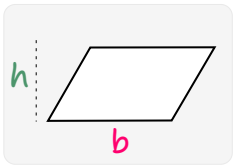
7 times ✓ A1

(2)

(Total marks for Question 13 is 5 marks)

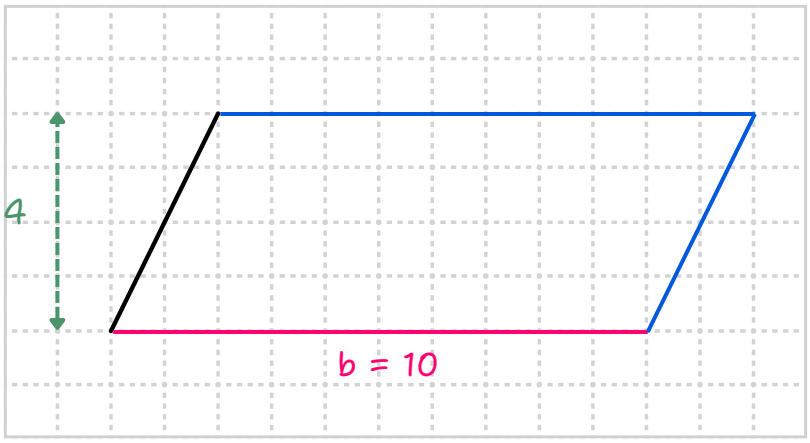
14 (a) One side of a parallelogram is drawn on this centimetre grid.
The parallelogram has **no** right angles.
Complete the parallelogram so it has an **area** of 40 cm²

Area = bxh



(2)

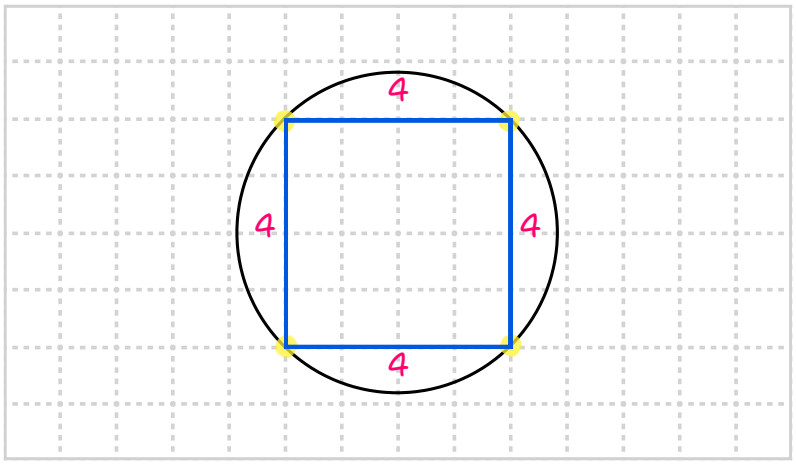
✓ M1 (attempt to find base)
✓ A1 (correct diagram drawn)



b = 40 ÷ 4
b = 10 cm

(b) Each vertex of a square touches the circumference of the circle below.
Work out the perimeter of this square.

✓ M1 (correct diagram drawn)



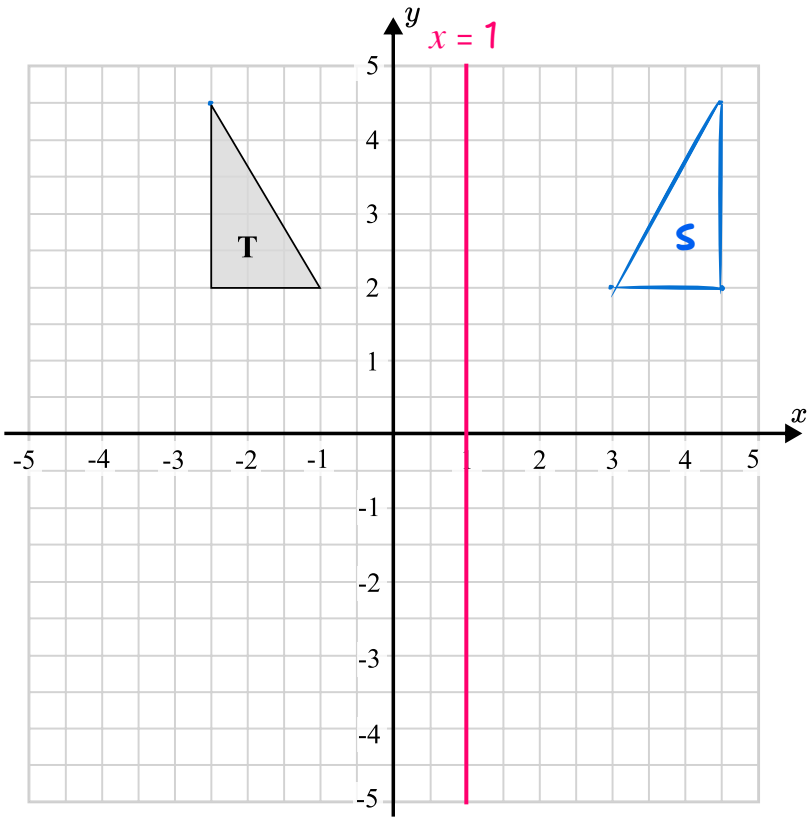
Perimeter = 4 + 4 + 4 + 4
= 16

16 ✓ A1

(2)

(Total marks for Question 14 is 4 marks)

15



✓ P1 (correct mirror line drawn)
✓ A2 (correct triangle drawn)

Reflect triangle **T** in the line $x = 1$
Label your image **S**.

(Total marks for Question 15 is 2 marks)

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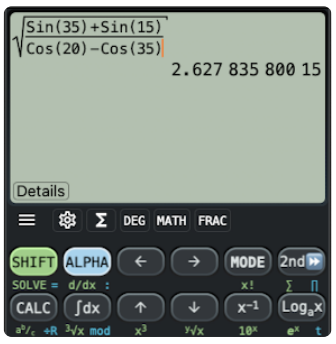
16 Use your calculator to work out $\sqrt{\dfrac{\sin 35^\circ + \sin 15^\circ}{\cos 20^\circ - \cos 35^\circ}}$



(a) Write down all the figures on your calculator display.

✓ Accept
2.6278358

2.62783580015 ✓ A1

(2)

(b) Write your answer to part (a) correct to 3 decimal places.

2.62783580015

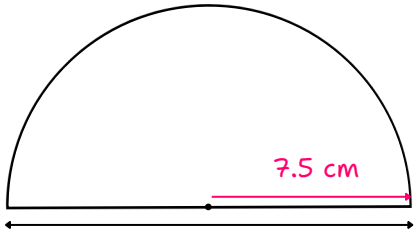
2.628 ✓ A1

(1)

(Total marks for Question 16 is 3 marks)

2F24

17 The diagram shows a semi-circle.



15 cm

Area = π x r²

Work out the area of the semi-circle.

Give your answer in mm², correct to 1 decimal place.

r = 15 ÷ 2

= 7.5 cm

1cm = 10 mm

r = 7.5 x 10

= 75 mm ✓ A1

Area = $\frac{\pi \times r^2}{2}$

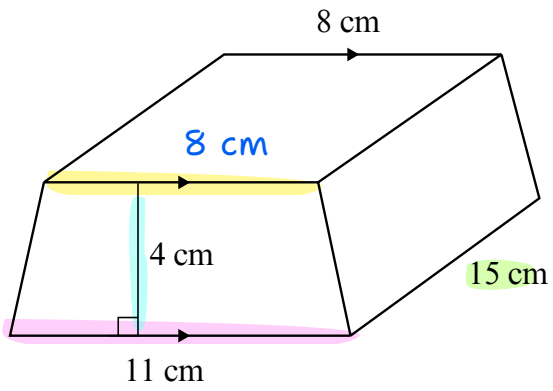
= $\frac{\pi \times (75)^2}{2}$ ✓ M1

= 8835.72933822129

8835.7 ✓ A1 ..... mm²

(Total marks for Question 17 is 3 marks)

18 Here is a prism.



Work out the volume of this prism.

Area of trapezium = ½ x (a+b) x h

Area = ½ x (8+11) x 4 ✓ M1

= 38 cm²

Volume = cross-section area x length

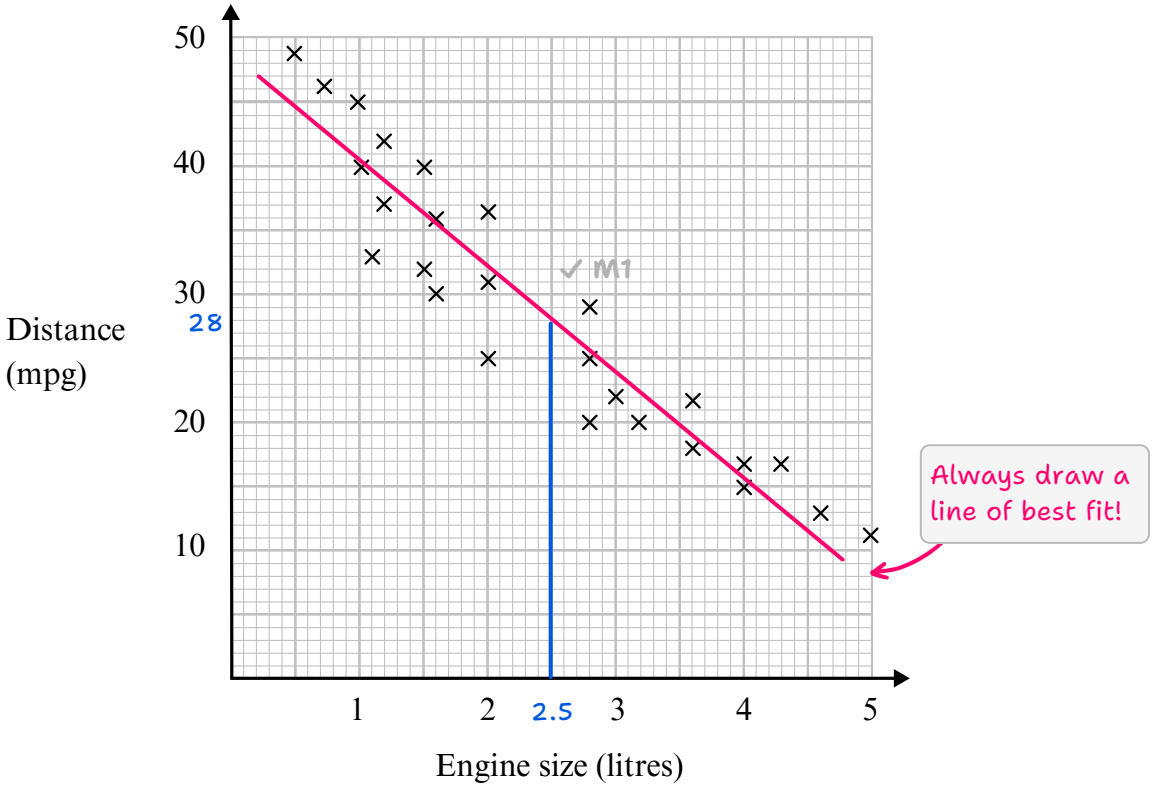
Volume = 38 x 15 ✓ M1

= 570 cm³

570 ✓ A1 ..... cm³

(Total marks for Question 18 is 3 marks)

19 The scatter graph shows information on the distance cars travel (per gallon of fuel) and their engine size.



Using the scatter graph, find an estimate for the expected mpg for a 2.5 litre engine.

25-30 ✓ A1 ..... mpg

(Total marks for Question 19 is 2 marks)

20 Josh is competing in a 20 mile race.
He must run the first half and then cycle the remaining half.

After 24 minutes, Josh looks at his fitness watch and reads he has ran 1.8 miles.

He continues this pace until he reaches the half way point.

Work out exactly how long the first half of the race takes Josh to complete.
Give your answer in, hours, minutes and seconds.

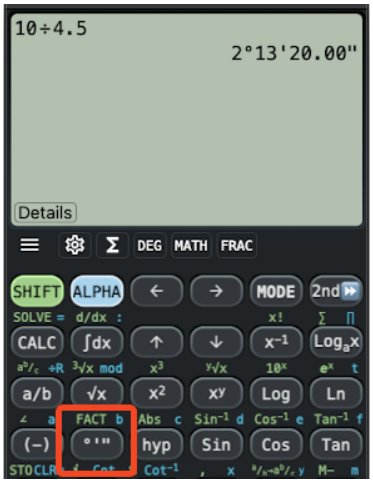
20 miles ÷ 2 = 10 miles to run

24 minutes ÷ 60 = 0.4 hours

$S = \frac{D}{T} = \frac{1.8}{0.4} = 4.5$ mph ✓ M1

$T = \frac{D}{S} = \frac{10}{4.5} = 2.\dot{2}$ hours ✓ M1

pressing [° ′ ″] button will convert your answer into hours, minutes & seconds!



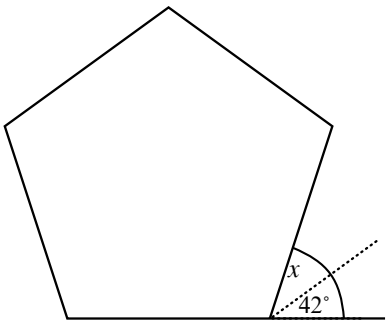
✓ A1

2 hrs, 13 mins & 20 secs

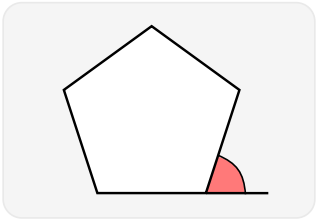
.....

(Total marks for Question 20 is 3 marks)

21 Here is a regular polygon.



Work out the size of angle x.



Exterior Angle = $\frac{360}{N}$

Where N = number of sides

Exterior Angle = $\frac{360}{5}$ = 72° ✓ M1

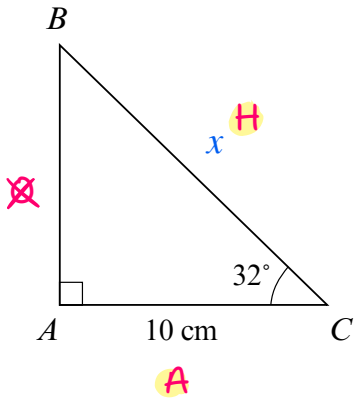
$\therefore$ $x = 72 - 42$ ✓ M1

$x = 30°$

30 ✓ A1 .....°

(Total marks for Question 21 is 3 marks)

22 Here is a right-angled triangle.



H

A

S°H C^A H T°A

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

Work out the length of BC.

Give your answer correct to 3 significant figures.

$\cos(32) = \frac{10}{x}$ ✓ M1

$x = \frac{10}{\cos(32)}$

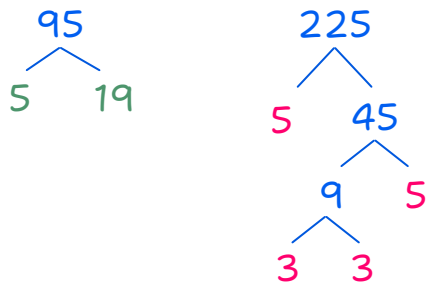
$x = 11.791784...$

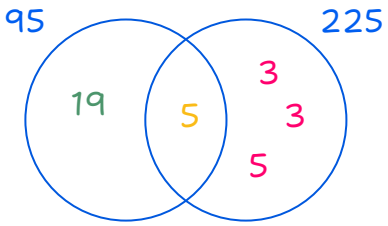
$x = 11.8$ cm ✓ A1 ..... cm

(Total marks for Question 22 is 2 marks)

2F24

23 Find the lowest common multiple (LCM) of 95 and 225





$95 = 5 \times 19$ ✓ M1

$225 = 3 \times 3 \times 5 \times 5$

LCM $= 19 \times 5^2 \times 3^2$

$= 4275$

4275 ✓ A1

(Total marks for Question 23 is 2 marks)

---

24 (a) Write 7.5×10^{-6} as an ordinary number.

0.000007.5

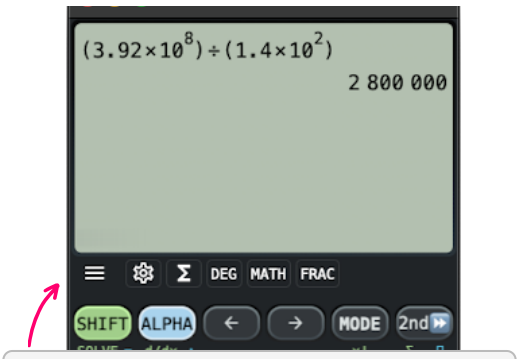
0.0000075

0.0000075 ✓ B1

(1)

(b) Work out $(3.92 \times 10^8) \div (1.4 \times 10^2)$

Give your answer in standard form.



You can input into your calculator

2800000. ✓ P1

2.800000

2.8×10^6 ✓ B1

(2)

(Total marks for Question 24 is 3 marks)

---

25 Joanne wants to invest £3800 into a high interest savings account.
These are the two banks she is considering.

Zupa Bank	**Sterling Bank**
Compound Interest Rates:	**Simple Interest Rates:**
6% for the **first** 6 months 3.2% thereafter	3.8% per annum

Work out the **difference** in interest Joanne would earn between the two banks after 4 years.

Compound Multipliers

$1 + \frac{6}{100} = 1.06$ $\quad 1 + \frac{3.2}{100} = 1.032$

Simple Multiplier

$3.8 \div 100 = 0.038$

Zupa Bank

$3800 \times 1.06^{0.5} \times 1.032^{3.5} = £4368.33$ ✓ M1

Interest earned = 4368.33 - 3800
= £568.33

Sterling Bank

$3800 \times 0.038 = £144.40$ ✓ M1

Interest earned = 4 x 144.40
= £577.60

Difference in interest = 577.60 - 568.33 ✓ M1
= £9.27

£ 9.27 ✓ A1

(Total marks for Question 25 is 4 marks)

26 A bag contains coloured counters.

The table gives information on the probabilities that, when a counter is take at random from the bag, the counter will be red or the counter will be purple.

Colour	red	blue	yellow	purple
Probability	0.3	0.36	0.12	0.22

=1

The ratio

number of blue counters : number of yellow counters = 3 : 1

There are 60 red counters in the bag.
Work out the number of blue counters in the bag.

1 - (0.3 + 0.22) = 0.48 ✓ M1

B	:	Y	total
3	:	1	4
0.36	:	0.12	0.48

x 0.12 ↓ ↓ x 0.12 ✓ M1

0.3 x 100 = 30% 0.36 x 100 = 36%

30% = 60 counters ✓ M1

÷0.12 ↓ ↓ ÷0.12

1% = 2 counters

x36 ↓ ↓ x36

36% = 72 counters

✓ A1

72 counters

(Total marks for Question 26 is 4 marks)

2F24

27 (a) Complete the table of values for $y = 1 - 3x - x^2$

y= 1 - 3(0) - (0)²

x	-4	-3	-2	-1	0	1
y	-3	1	3	3	1	-3

y= 1 - 3(-4) - (-4)² y= 1 - 3(-2) - (-2)² y= 1 - 3(-1) - (-1)²

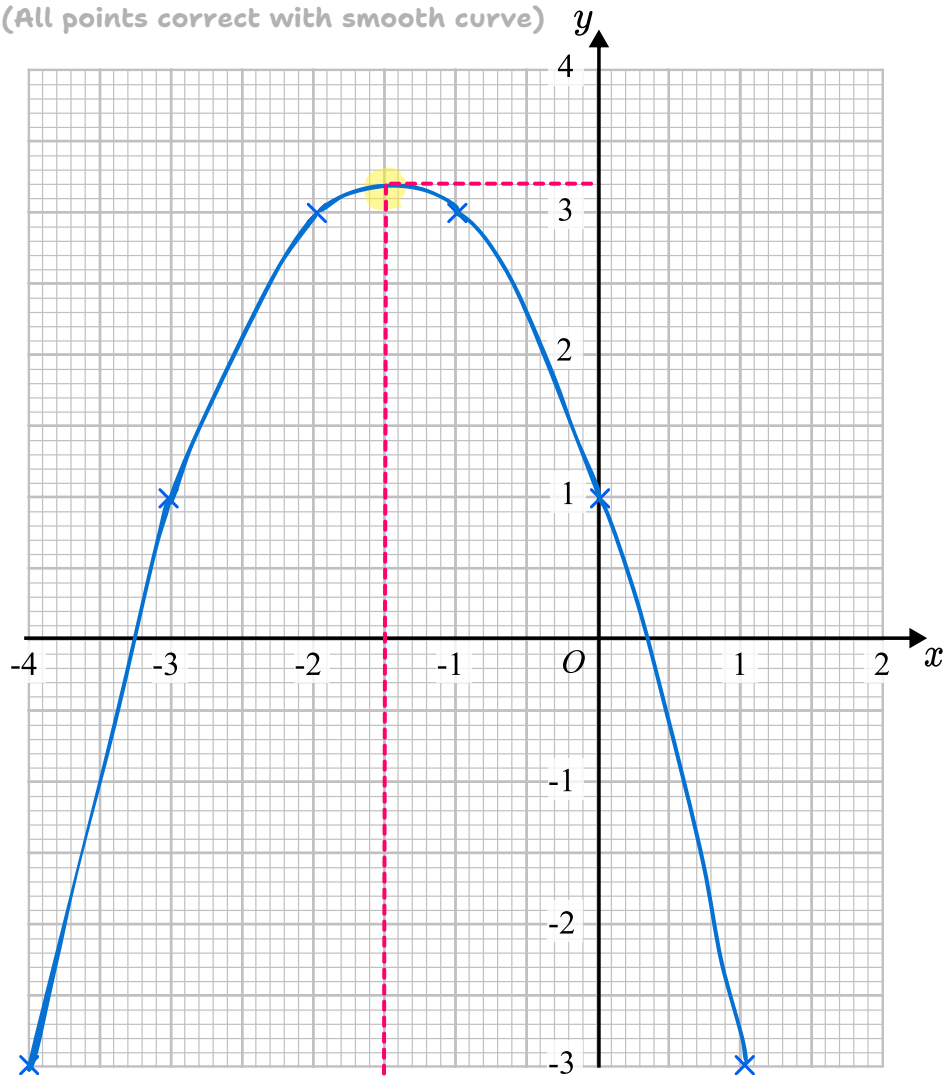
(1)

✓ A1 (All 4 values correct)

(b) On the grid, draw the graph of $y = 1 - 3x - x^2$ for x values from -4 to 1

(2)

✓ A1 (At least 3 correct points)
✓ A2 (All points correct with smooth curve)



(c) Using your graph, write down the coordinates of the turning point.

✓ A1

Accept range:
x: -1.2 to -1.8
y: 3 to 3.5

(-1.5 , 3.2)

(1)

(Total marks for Question 27 is 4 marks)

28 (a) The number, n, is rounded to 1 decimal place.

The result is 10.3

Complete the error interval for n.

✓ B1 ✓ B1

10.25 ..... $\leq n <$ 10.35

(2)

(b) Simplify $\dfrac{5x^2 \times x^{-5}}{x^{-7}}$

$a^n \times a^m = a^{n+m}$ $a^n \div a^m = a^{n-m}$

✓ A1

$\dfrac{5x^2 \times x^{-5}}{x^{-7}} = \dfrac{5x^{-3}}{x^{-7}} = 5x^4$

$-3-(-7) = 4$

$5x^4$ ✓ A1

(2)

(c) Simplify $(3xy^2)^4$

$(a^n)^m = a^{nm}$ $(3xy^2)^4 = 3^4x^4y^8$ ✓ B1 (for at least two correct terms)

$= 81x^4y^8$

$81x^4y^8$ ✓ A1

(2)

(Total marks for Question 28 is 6 marks)

TOTAL FOR PAPER IS 80 MARKS

2F24