Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel International GCSE (9–1)

Wednesday 5 November 2025

Morning (Time: 2 hours)

Paper reference **4WM1H/01**

Mathematics A (Modular)

UNIT 1H
Higher Tier

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.
- Anything you write on the formulae page will gain NO credit.

Information

- The total mark for this unit is 100.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Check your answers if you have time at the end.

Turn over ▶

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P 8 1 6 4 3 A 0 1 2 8

Pearson

International GCSE Mathematics

Formulae sheet – Higher Tier

Arithmetic series

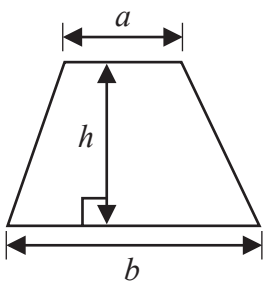
Sum to n terms, $S_n = \frac{n}{2}[2a + (n-1)d]$

The quadratic equation

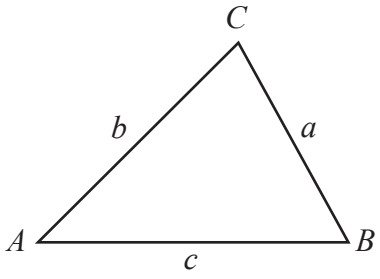
The solutions of $ax^2 + bx + c = 0$ where $a \neq 0$ are given by:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Area of trapezium $= \frac{1}{2}(a + b)h$



Trigonometry



In any triangle *ABC*

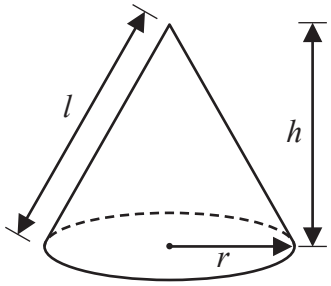
Sine Rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc\cos A$

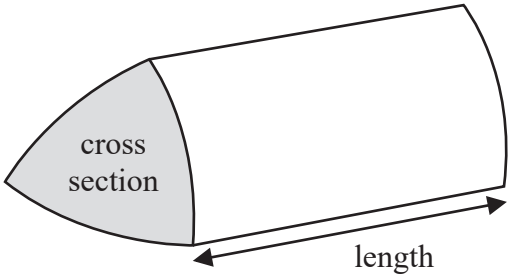
Area of triangle $= \frac{1}{2}ab\sin C$

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

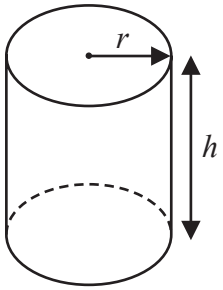
Curved surface area of cone $= \pi rl$



Volume of prism
= area of cross section × length

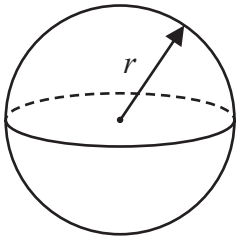


Volume of cylinder $= \pi r^2 h$
Curved surface area of cylinder $= 2\pi rh$



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

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

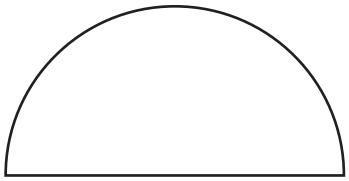


Answer ALL TWENTY EIGHT questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The diagram shows a semicircle.



12 cm

Diagram **NOT** accurately drawn

The semicircle has diameter 12 cm

Work out the perimeter of the semicircle.
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 1 is 2 marks)

2 By rounding each number to one significant figure, work out an estimate for the value of

$$\frac{2.11^2 \times 58.9}{\sqrt{8.859}}$$

Show your working clearly.

.....

(Total for Question 2 is 2 marks)

3 Show that $3\frac{5}{7} + 1\frac{2}{3} = 5\frac{8}{21}$

(Total for Question 3 is 3 marks)

4 $\mathscr{E} = \{8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18\}$

$A = \{\text{odd numbers}\}$

$B = \{\text{multiples of 3}\}$

$C = \{\text{prime numbers}\}$

(a) List the members of the set $A \cup C$

.....

(1)

(b) List the members of the set $(A \cap B)'$

.....

(1)

(c) Is it true that $15 \in (B \cap C)$?

Tick (✓) the correct box.

Yes	No
☐	☐

Give a reason for your answer.

.....

.....

(1)

D is a set such that $D \cup C = A$

D has 2 members.

(d) List the members of D

.....

(1)

(Total for Question 4 is 4 marks)

5 All students at a school are asked which sport they prefer from football, tennis, rugby and cricket.

The table gives information about the probabilities that, when a student is chosen at random, the student prefers football or tennis or rugby or cricket.

Favourite sport	football	tennis	rugby	cricket
Probability	$2x$	0.2	x	0.35

One of the students at the school is chosen at random.

(a) Work out the probability that this student prefers tennis or cricket.

.....

(1)

There are 700 students at the school.

(b) Work out how many students prefer football.

.....

(4)

(Total for Question 5 is 5 marks)

6 The weight of a bag of apples is 475 g correct to the nearest g

(a) Write down the lower bound of the weight.

..... g

(1)

The height of a box is 120 cm correct to the nearest 10 cm

(b) Write down the upper bound for the height.

..... cm

(1)

(Total for Question 6 is 2 marks)

7 $\dfrac{8^{-2} \times 8^{9}}{8^{10}} = 8^{n}$

Work out the value of n

$n =$ .....

(Total for Question 7 is 2 marks)

8 (a) Expand $5w(3w - 4w^2)$

.....

(2)

(b) Simplify fully $\left(4a^3c^5\right)^3$

.....

(2)

(c) Factorise fully $14m^3p^2 + 21m^2p^4$

.....

(2)

(d) (i) Factorise $x^2 - 10x + 24$

.....

(2)

(ii) Hence solve $x^2 - 10x + 24 = 0$

.....

(1)

(Total for Question 8 is 9 marks)

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9 The diagram shows a sketch of a right-angled triangle, ABC

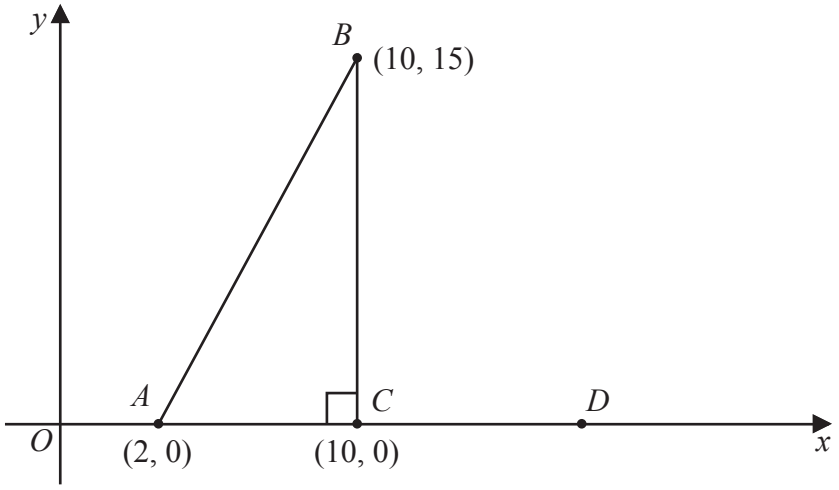


Diagram **NOT** accurately drawn

A is the point with coordinates $(2, 0)$
B is the point with coordinates $(10, 15)$
C is the point with coordinates $(10, 0)$

D is a point on the x-axis such that $AB = AD$

Find the coordinates of D

(..... , ...)

(Total for Question 9 is 4 marks)

10 A parcel in the shape of a cube is placed on a table so that the whole of one face of the parcel is in contact with the table.

The parcel has sides of length 7 cm

The pressure on the table due to the parcel is 62 newtons/cm^2

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Work out the force exerted by the parcel on the table.

..... newtons

(Total for Question 10 is 3 marks)

11 ABC is a right-angled triangle.

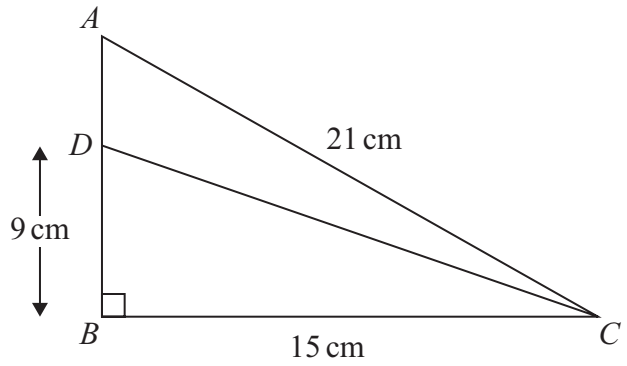


Diagram **NOT** accurately drawn

$AC = 21$ cm $BC = 15$ cm angle $ABC = 90°$

The point D lies on AB such that $DB = 9$ cm

Work out the size of angle ACD
Give your answer correct to one decimal place.

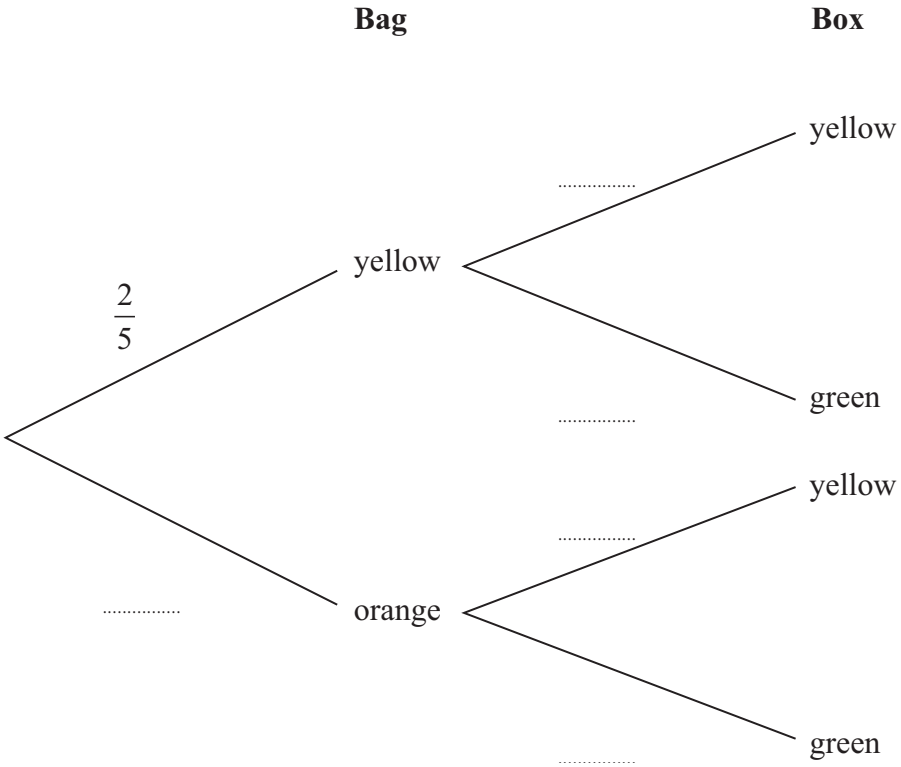
.....°

(Total for Question 11 is 4 marks)

12 In a bag, there are only 2 yellow beads and 3 orange beads.
In a box, there are only 3 yellow beads and 5 green beads.

Chi takes at random a bead from the bag and a bead from the box.

(a) Complete the probability tree diagram.



(2)

(b) Work out the probability that Chi takes two beads of different colours.

.....

(3)

(Total for Question 12 is 5 marks)

13 (a) Expand and simplify $7x(3x + 2)(2x - 5)$

.....

(3)

(b) Solve $\frac{9}{2y} + \frac{5}{7} = 5$

Show clear algebraic working.

$y =$ .....

(3)

(Total for Question 13 is 6 marks)

14 AOB is a sector of a circle with centre O and radius 12 cm

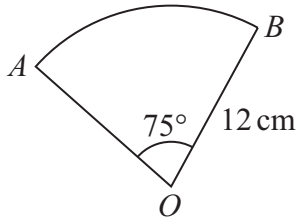


Diagram **NOT** accurately drawn

Work out the area of the sector.
Give your answer correct to 3 significant figures.

..... cm^2

(Total for Question 14 is 2 marks)

15 $\dfrac{16^{x-3} \times 8^{x+1}}{32^x} = 2^n$

Express n in terms of x
Give your answer in its simplest form.

$n =$ .....

(Total for Question 15 is 3 marks)

16 Show that $\dfrac{2\sqrt{7}+2}{\sqrt{7}-3}$ can be written in the form $a-\sqrt{b}$ where a and b are integers.

Show your working clearly.

(Total for Question 16 is 3 marks)

17 Use algebra to show that $0.9\dot{5}\dot{4} = \dfrac{21}{22}$

(Total for Question 17 is 2 marks)

18 The diagram shows a rectangle.

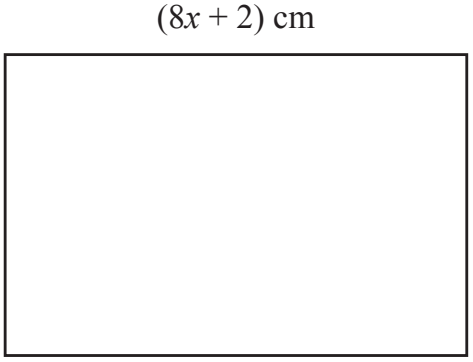


Diagram **NOT** accurately drawn

The rectangle has length $(8x + 2)$ cm and width $(3x - 2)$ cm
The area of the rectangle is $500\ \text{cm}^2$

(a) Show that $12x^2 - 5x - 252 = 0$

(1)

(b) Hence find the value of x
Give your answer correct to 3 significant figures.

$x =$ .....

(3)

(Total for Question 18 is 4 marks)

19 The diagram shows triangle ABC

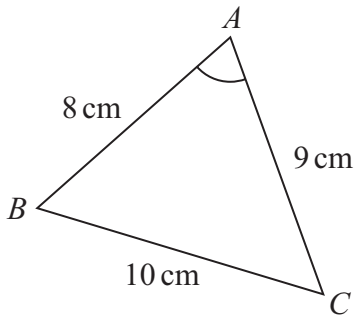


Diagram **NOT** accurately drawn

$AB = 8\,\text{cm}$ $BC = 10\,\text{cm}$ $CA = 9\,\text{cm}$

Work out the size of angle BAC
Give your answer correct to one decimal place.

.....°

(Total for Question 19 is 3 marks)

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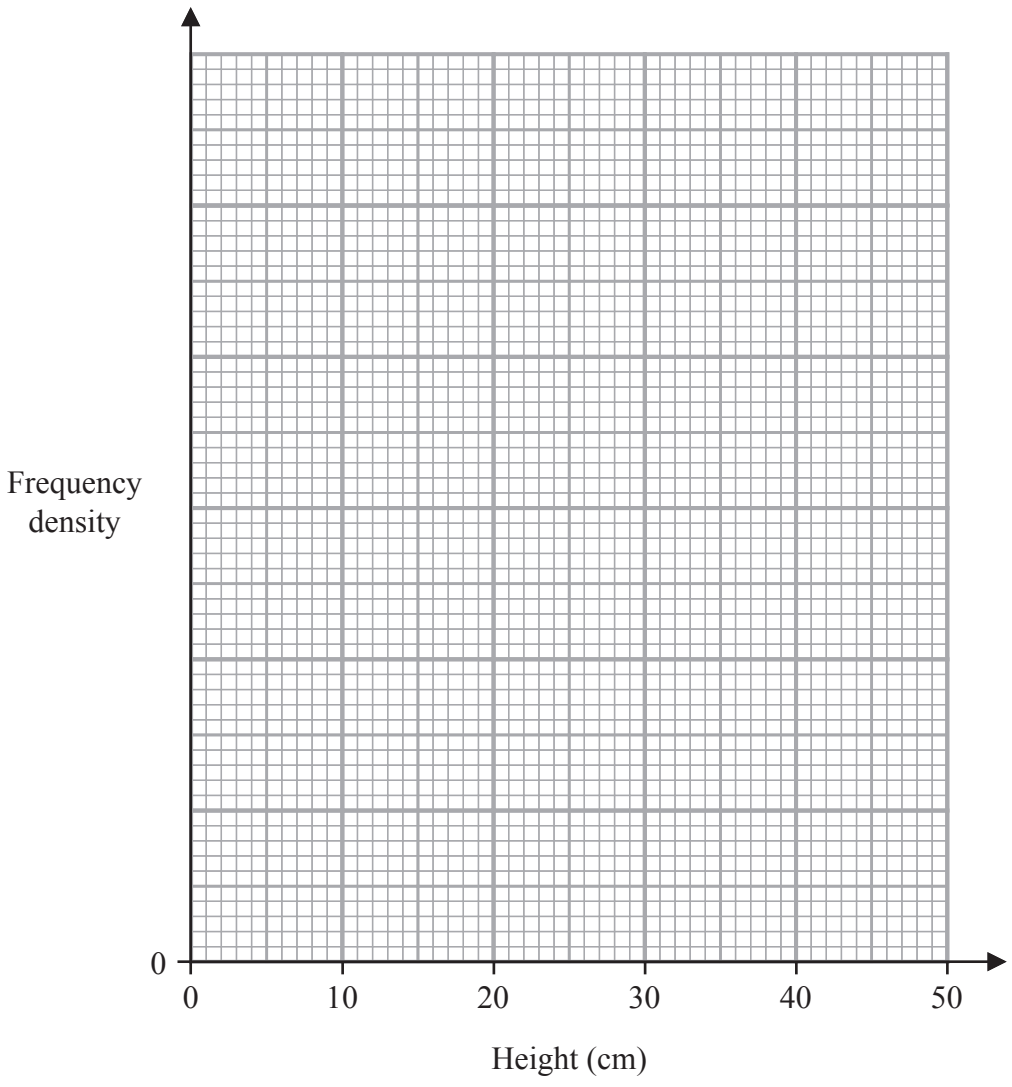
DO NOT WRITE IN THIS AREA
DO NOT WRITE IN THIS AREA

20 The table gives information about the heights, in centimetres, of some plants.

Height (h cm)	Frequency
$0 < h \leqslant 5$	12
$5 < h \leqslant 15$	34
$15 < h \leqslant 30$	45
$30 < h \leqslant 50$	28

On the grid, draw a histogram for this information.
You must include a scale on the vertical axis.



(Total for Question 20 is 3 marks)

21 The diagram shows an equilateral triangle and a circle.

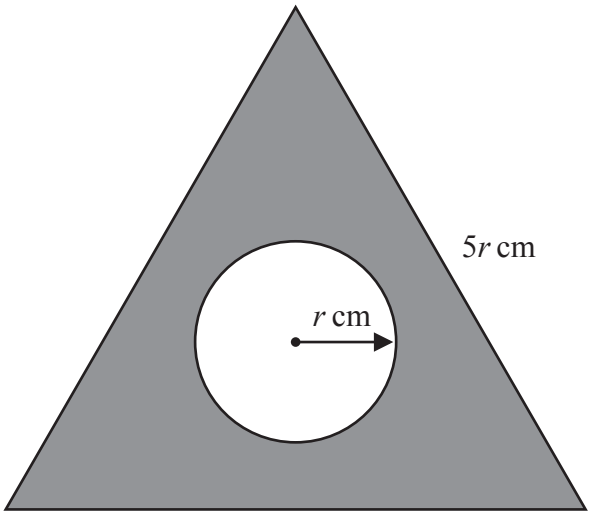


Diagram **NOT** accurately drawn

The equilateral triangle has sides of length $5r$ cm
The circle has radius r cm

The area of the shaded region is 610π cm^2
Work out the value of r

Give your answer correct to 3 significant figures.

$r =$ .....

(Total for Question 21 is 4 marks)

22 $9x^2 - 12x + q$ can be written in the form $(px - r)^2$ where p, q and r are integers.

Find the value of q

$q =$ .....

(Total for Question 22 is 2 marks)

23 There are 15 buttons in a box.

3 of the buttons are red
2 of the buttons are pink
10 of the buttons are blue

Pete takes at random three buttons from the box.

Work out the probability that there is still at least one pink button in the box.

(Total for Question 23 is 3 marks)

24 Express $5x^2 - 20x + 23$ in the form $a(x - b)^2 + c$ where a, b and c are integers.

.....

(Total for Question 24 is 3 marks)

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25 $a = \dfrac{2x + 5}{1 - x}$ $x = \dfrac{5 - 2y}{3y}$

Write a in the form $\dfrac{m + ny}{p(y - 1)}$ where m, n and p are integers.

Show your working clearly.

$a =$ .....

(Total for Question 25 is 3 marks)

26 The diagram shows prism *ABCDEFGH*

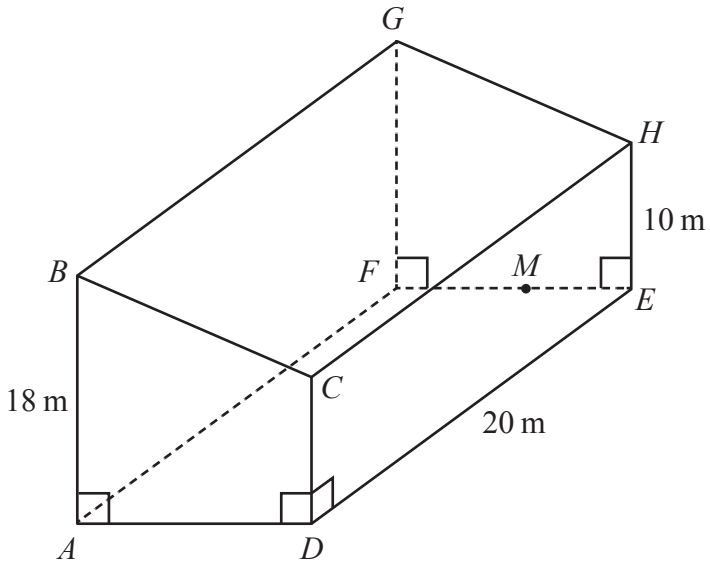

Diagram **NOT** accurately drawn

$AB = FG = 18\,\text{m}$ $DC = EH = 10\,\text{m}$ $AD = FE$

$DE = CH = AF = BG = 20\,\text{m}$

angle BAD = angle ADC = angle CDE = $90°$

M is the point on FE such that $FM = \frac{3}{5}FE$

Given that angle $GMF = 60°$

calculate the angle of elevation of G from D
Give your answer correct to one decimal place.
Show your working clearly.

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

.....°

(Total for Question 26 is 5 marks)

27 $ABCD$ is a rhombus with $AB = BC = CD = DA$

A has coordinates $(16, -9)$

C has coordinates $(24, 15)$

Find an equation of the line BD
Give your answer in the form $ax + by + c = 0$ where a, b and c are integers.
Show your working clearly.

.....

(Total for Question 27 is 5 marks)

28 Solve $\dfrac{6x^3 + 5x^2 + x}{4x^2 - 1} \div \dfrac{15x^2 - x - 2}{8x - 4} = 2x$

Show clear algebraic working.

$x =$ .....

(Total for Question 28 is 4 marks)

TOTAL FOR UNIT IS 100 MARKS

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