

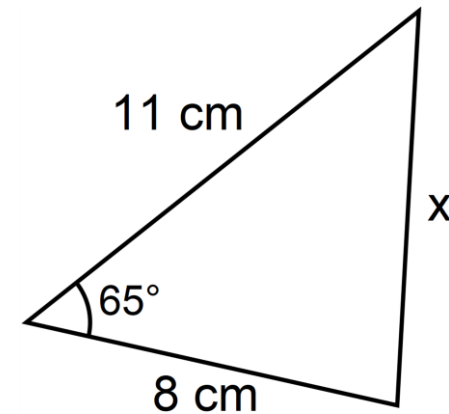
**CARD 1**

Express in completed square form

$$x^2 - 6x + 4$$

**HIGHER RELAY 1****CARD 2**

Calculate x (correct to 2 decimal places)

**HIGHER RELAY 1****CARD 3**

The following results are from a survey looking at the viewing habits of 50 students

- 24 students watched Drama
- 26 students watched Crime
- 30 students watched Comedy
- 10 students watched Drama and Comedy
- 15 students watched Crime and Comedy
- 15 students watched Drama and Crime
- 5 watched all 3 types

Represent the results in a Venn diagram and use this to work out how many students didn't watch any of the above

**HIGHER RELAY 1****CARD 4**

Expand and Simplify

$$(\sqrt{3} + 4)(2\sqrt{3} - 1)$$

**HIGHER RELAY 1**

**CARD 5**

Calculate the equation of the line  
passing through the points

**$(-3, 2)$  and  $(-1, 10)$**

**HIGHER RELAY 1****CARD 6**

Work out

$$1\frac{2}{5} \times 1\frac{1}{3}$$

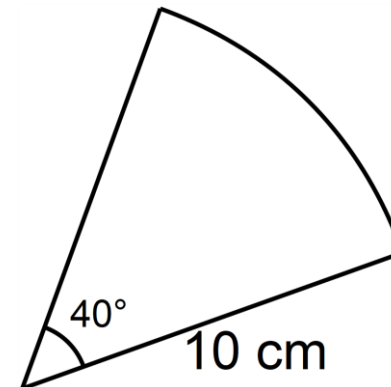
**HIGHER RELAY 1****CARD 7**

Find the nth term of

**4, 10, 18, 28, 40**

**HIGHER RELAY 1****CARD 8**

Calculate the perimeter of the sector  
Answer correct to 2 d.p.

**HIGHER RELAY 1**

CARD 9

$$f(x) = x^2 + 2 \quad \text{and} \quad g(x) = 1 - x$$

Find

$fg(x)$  in the form  $ax^2 + bx + c$

HIGHER RELAY 1

CARD 10

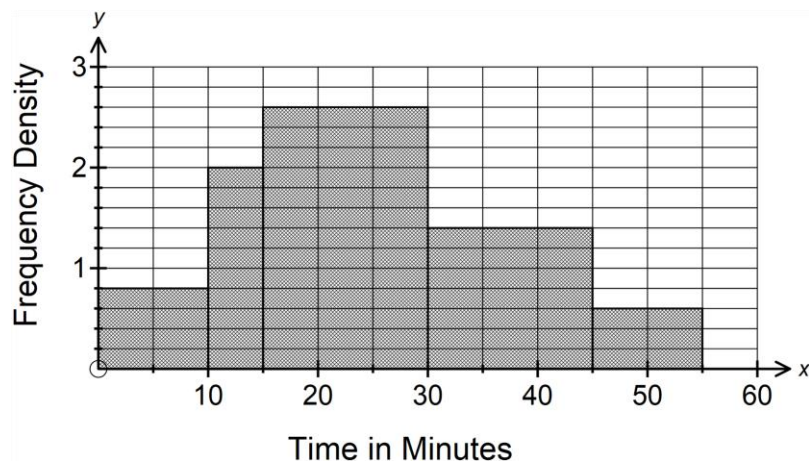
Simplify

$$\frac{3x^2 + 8x - 3}{x^2 - x - 12}$$

HIGHER RELAY 1

CARD 11

Estimate the median time



HIGHER RELAY 1

CARD 12

Make  $x$  the subject of the formula

$$y = \sqrt{ax} - b$$

HIGHER RELAY 1

**CARD 13**

y is inversely proportional to the square of x

When  $x = 4$   $y = 4$

Find the value of x when  $y = 256$

**HIGHER RELAY 1****CARD 14**

800ml of paint is needed to paint a model.

If the model is enlarged by scale factor 5,  
how many litres of paint will be needed to  
paint the new model?

**HIGHER RELAY 1****CARD 15**

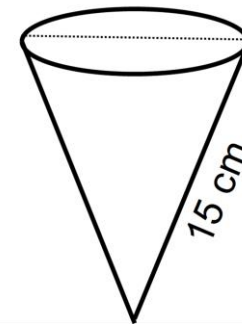
Solve

$$x^2 + 3x - 18 \leq 0$$

**HIGHER RELAY 1****CARD 16**

Calculate the volume of the cone (2 d.p.)

Diameter = 10 cm

**HIGHER RELAY 1**

CARD 17

Expand and simplify

$$(x - 1)^2(x + 2)$$

HIGHER RELAY 1

CARD 18

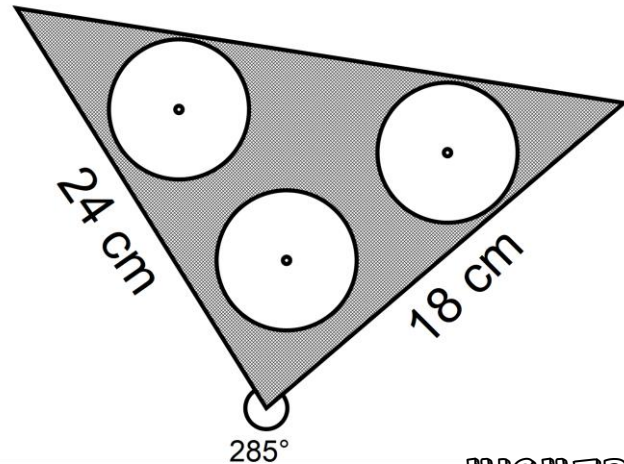
Express  $0.5\dot{4}\dot{6}$  as a fraction

HIGHER RELAY 1

CARD 19

Calculate the shaded area correct to 2 decimal places

The circles are identical with radius 2.5 cm



HIGHER RELAY 1

CARD 20

An approximate solution to an equation is found using this iterative process

$$x_{n+1} = \sqrt{x_n + 5} \quad \text{and} \quad x_1 = 2$$

Workout the values of  $x_4$  and  $x_5$

HIGHER RELAY 1

**CARD 1**

Express in completed square form

$$x^2 - 6x + 4$$

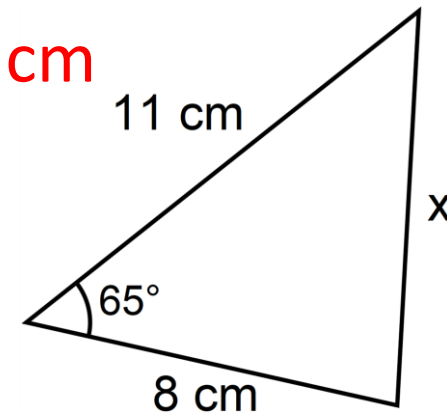
$$(x - 3)^2 - 5$$

**HIGHER RELAY 1**

**CARD 2**

Calculate x (correct to 2 decimal places)

10.52 cm



**HIGHER RELAY 1**

**CARD 3**

The following results are from a survey looking at the viewing habits of 50 students

- 24 students watched Drama
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- 10 students watched Drama and Comedy
- 15 students watched Crime and Comedy
- 15 students watched Drama and Crime
- 5 watched all 3 types

Represent the results in a Venn diagram and use this to work out how many students didn't watch any of the above

5

**HIGHER RELAY 1**

**CARD 4**

Expand and Simplify

$$(\sqrt{3} + 4)(2\sqrt{3} - 1)$$

$$2 + 7\sqrt{3}$$

**HIGHER RELAY 1**

**CARD 5**

Calculate the equation of the line  
passing through the points

**$(-3, 2)$  and  $(-1, 10)$**

$$y = 4x + 14$$

**HIGHER RELAY 1****CARD 6**

Work out

$$1\frac{2}{5} \times 1\frac{1}{3}$$

$$1\frac{13}{15}$$

**HIGHER RELAY 1****CARD 7**

Find the nth term of

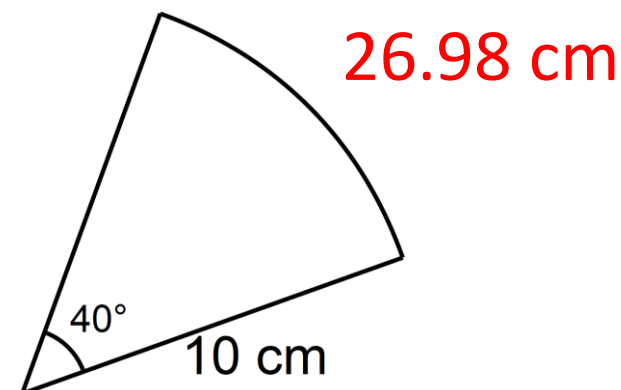
**4, 10, 18, 28, 40**

$$n^2 + 3n$$

**HIGHER RELAY 1****CARD 8**

Calculate the perimeter of the sector.

Answer correct to 2 d.p.

**HIGHER RELAY 1**

**CARD 9**

$$f(x) = x^2 + 2 \quad \text{and} \quad g(x) = 1 - x$$

Find

 $fg(x)$  in the form  $ax^2 + bx + c$ 

$$x^2 - 2x + 3$$

**HIGHER RELAY 1****CARD 10**

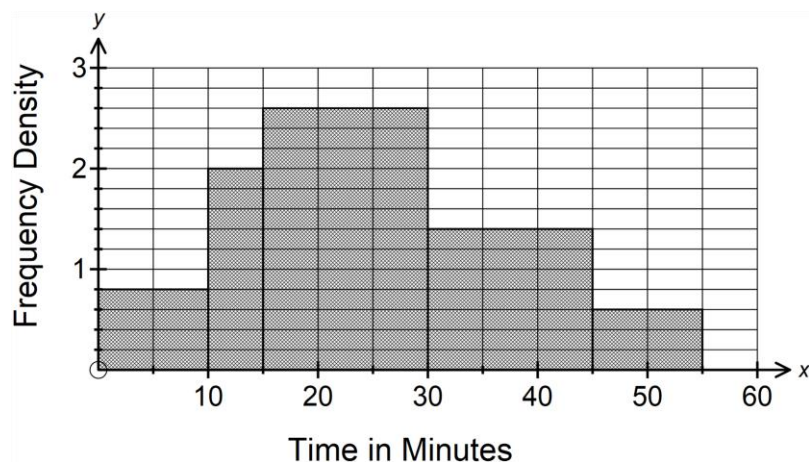
Simplify

$$\frac{3x^2 + 8x - 3}{x^2 - x - 12}$$

$$\frac{3x - 1}{x - 4}$$

**HIGHER RELAY 1****CARD 11**

Estimate the median time

**24.4 minutes****HIGHER RELAY 1****CARD 12**Make  $x$  the subject of the formula

$$y = \sqrt{ax} - b$$

$$x = \frac{(y + b)^2}{a}$$

**HIGHER RELAY 1**



**CARD 13**

y is inversely proportional to the square of x

When  $x = 4$   $y = 4$

Find the value of x when  $y = 256$

$$x = 0.5$$

**HIGHER RELAY 1**

**CARD 14**

800ml of paint is needed to paint a model.

If the model is enlarged by scale factor 5, how many litres of paint will be needed to paint the new model?

**20 litres**

**HIGHER RELAY 1**

**CARD 15**

Solve

$$x^2 + 3x - 18 \leq 0$$

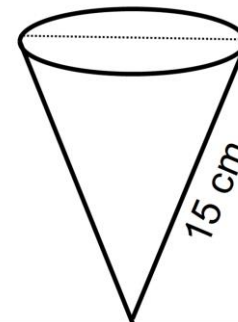
$$-6 \leq x \leq 3$$

**HIGHER RELAY 1**

**CARD 16**

Calculate the volume of the cone (2 d.p.)

Diameter = 10 cm



$$x = 370.24 \text{ cm}^3$$

**HIGHER RELAY 1**

CARD 17

Expand and simplify

$$(x - 1)^2(x + 2)$$

$$x^3 - 3x + 2$$

HIGHER RELAY 1

CARD 18

Express  $0.5\dot{4}\dot{6}$  as a fraction

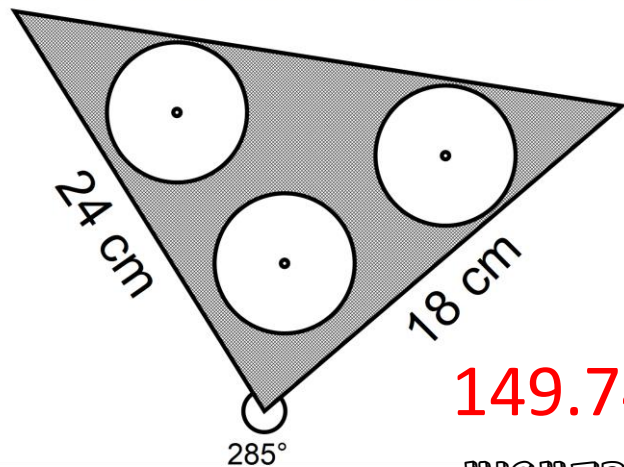
$$\frac{541}{990}$$

HIGHER RELAY 1

CARD 19

Calculate the shaded area correct to 2 decimal places

The circles are identical with radius 2.5 cm



$$149.74 \text{ cm}^2$$

HIGHER RELAY 1

CARD 20

An approximate solution to an equation is found using this iterative process

$$x_{n+1} = \sqrt{x_n + 5} \quad \text{and} \quad x_1 = 2$$

Workout the values of  $x_4$  and  $x_5$

$$x_4 = 2.786592035$$

$$x_5 = 2.790446566$$

HIGHER RELAY 1