

Quick 10

- 1) 13.2×4.3 **56.76**
- 2) Share £132 in the ratio 7:4 **£84 : £48**
- 3) Decrease 80 by 30% **56**
- 4) $5 - 28 \div 7 + \sqrt{49}$ **8**
- 5) A recipe for 8 biscuits needs 120g of flour. How much flour is needed for 12 biscuits? **180g**
- 6) Expand $3(x - 7)$ **$3x - 21$**
- 7) Solve $8x - 5 = 43$ **$x = 6$**
- 8) Factorise $9x + 12$ **$3(3x + 4)$**
- 9) What is the LCM of 3 and 7 **21**
- 10) $\frac{2}{3} + \frac{5}{7} = \frac{29}{21} = 1\frac{8}{21}$

Need to know formulae/facts

How do you find the median for a list of numbers?

Middle when in order

Use of a calculator

Calculate

$$\tan^{-1}\left(\frac{2}{5}\right) = \mathbf{21.8^\circ}$$

Functional:

Richard is going to cover a bathroom wall with tiles.
The wall is in the shape of a rectangle.

The wall is 1.8 m long and 2.4 m high.

The tiles are squares with sides of 30 cm.
There are 14 tiles in a box.

$$1.8 \div 0.3 = 6$$

$$2.4 \div 0.3 = 8$$



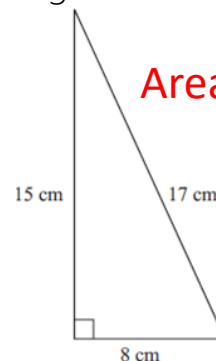
$$6 \times 8 = 48 \text{ tiles}$$

How many boxes of tiles does Richard need?

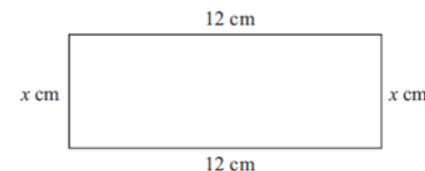
You must show all your working. **$48 \div 14 = 3.4$ so 4 boxes**

Problem Solving:

The diagrams show a right-angled triangle and a rectangle.



$$\text{Area} = \frac{15 \times 8}{2} = 60\text{cm}^2$$



$$60 \div 12 = 5\text{cm}$$

The area of the right-angled triangle is equal to the area of the rectangle.

Find the value of x .

$$x = 5$$

Quick 10 – Recall

- 1) 44.2×7.4 **327.08**
- 2) Share £120 in the ratio 2: 5: 1
£30 : £75 : £15
- 3) Decrease 70 by 90%
7
- 4) $10 - 70 \div 7 + \sqrt{64}$ **8**
- 5) A recipe for 4 biscuits needs 90g of flour. How much flour is needed for 10 biscuits? **225g**
- 6) Expand $x(x - 5)$ **$x^2 - 5x$**
- 7) Solve $4x - 5 = -25$ **$x = -5$**
- 8) Factorise fully $8x + 12$
 $4(2x + 3)$
- 9) What is the LCM of 8 and 7
56
- 10) $\frac{3}{8} + \frac{5}{7} = \frac{61}{56} = 1\frac{5}{56}$

Need to know
formulae/facts

$11^2, 12^2, 13^2, 14^2, 15^2$

**121, 144,
169, 196, 225**

Use of a
calculator

Calculate

$\sin^{-1}\left(\frac{2}{5}\right) = 23.6^\circ$

Fahima buys

2 packets of bread rolls costing £1.50 for each packet **$2 \times 1.50 = £3$**

1 bottle of ketchup costing £1.60

3 packets of sausages

$3 + 1.60 + 0.30 = £4.90$

Fahima pays with a £10 note.

She gets 30p change.

$10 - 4.90 = £5.10$

Fahima works out that one packet of sausages costs £2.30

Is Fahima right?

$5.10 \div 3 = £1.70$ per sausage pack

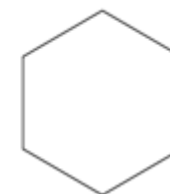
You must show how you get your answer.

No Fahima is not right.

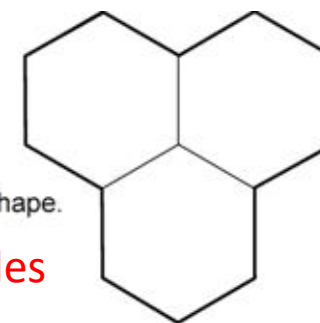
Problem Solving:

This hexagon has a perimeter of 24 cm.

$24 \div 6 = 4\text{cm}$



Perimeter
all sides
added up



Three of the hexagons are used to make this shape.

Perimeter of this shape = 12 sides

What is the perimeter of the shape? **$12 \times 4 = 48\text{cm}$**

Quick 10 – Recall

- 1) 26.2×7.3 **191.26**
- 2) Share £120 in the ratio 7: 2: 3
£70 : £20 : £30
- 3) Decrease 72 by 25%
54
- 4) $12 - 35 \div 5 + \sqrt{100}$ **15**
- 5) A recipe for 4 biscuits needs 50g of flour. How much flour is needed for 10 biscuits? **125g**
- 6) Expand $4x(x - 5)$ **$4x^2 - 20x$**
- 7) Solve $8x - 5 = 75$ **$x = 10$**
- 8) Factorise fully $8x + 16$
 $8(x + 2)$
- 9) What is the LCM of 6 and 9
18
- 10) $\frac{1}{6} + \frac{5}{9} = \frac{39}{45} = \frac{13}{15}$

Need to know
formulae/facts

First 5 cube numbers

**1, 8, 27,
64, 125**

Use of a
calculator

Calculate

$$\sin^{-1}\left(\frac{2}{5}\right) = \mathbf{22.0^\circ}$$

Functional:

Sean works for a company.

His normal rate of pay is £12 per hour. **$8 \times 12 = \text{£}96$**

When Sean works more than 8 hours a day, he is paid overtime for each hour he works more than 8 hours.

Sean's rate of overtime pay per hour is $1\frac{1}{4}$ times his normal rate of pay per hour.

On Monday Sean worked for 10 hours.

$$\mathbf{1.25 \times 12 = 15}$$

Work out the total amount of money Sean earned on Monday.

$$\mathbf{15 \times 2 = \text{£}30}$$

$$\mathbf{96 + 30 = \text{£}126}$$

Problem Solving:

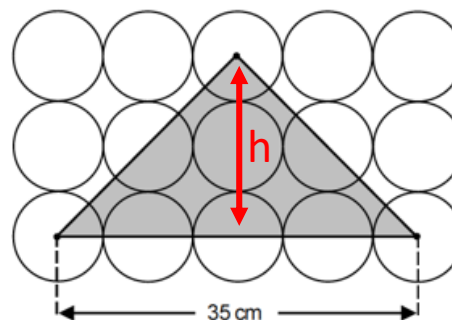
The diagram shows 15 identical circles, arranged as a rectangle, and a shaded triangle.

The vertices of the triangle are at the centre of circles.

$$\text{Area} = \frac{35 \times 17.5}{2}$$

$$= \mathbf{306.25\text{cm}^2}$$

$$\begin{aligned} h &= 4 \text{ radius} \\ &= 4 \times 4.375 \\ &= \mathbf{17.5\text{cm}} \end{aligned}$$



Calculate the area of the shaded triangle.

$$\begin{aligned} 35\text{cm} &= 8 \text{ radii} \\ \text{Radius} &= 35 \div 8 = \mathbf{4.375} \end{aligned}$$

Quick 10 – Recall

- 1) 17.2×7.9 **135.88**
- 2) Share £120 in the ratio 4: 1: 3
£60 : £15 : £45
- 3) Increase 70 by 20%
84
- 4) $10 - 35 \div 7 + \sqrt{4}$ **7**
- 5) £1 = \$1.30. **\$390**
Convert £300 into dollars
- 6) Expand $3x(y - 2)$ **$3xy - 6x$**
- 7) Solve $3x - 5 = 10$ **$x = 5$**
- 8) Factorise $9x + 15$ **$3(3x + 5)$**
- 9) What is the LCM of 8 and 12
- 10) $\frac{1}{8} + \frac{5}{12} = \frac{52}{96} = \frac{13}{24}$ **24**

Need to know formulae/facts

Prime numbers between 10 and 20

11, 13, 17, 19

Use of a calculator

Calculate

$$\cos^{-1}\left(\frac{3}{8}\right) = \mathbf{68.0^\circ}$$

Functional:

Use of a
calculator
Calculate

$$350 \div 100 = 3.5$$

$$45 \div 10 = 4.5$$

$$8 \div 2 = 4$$

$$\text{Max} = 3.5 \times 2 \cos^{-1}\left(\frac{3}{8}\right) = \mathbf{68.0^\circ}$$

$$= 7 \text{ people}$$

Problem Solving:

Double Trouble

Use all the digits

0 1 5 0 1 5 0

to complete this multiplication:

5	0	5
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 $\times 2 =$

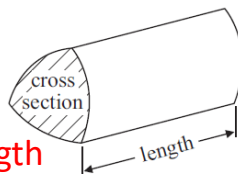
1	0	1	0
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Quick 10 – Recall

- 1) 4.5×12 **54**
- 2) Share £30 in the ratio 1:3
£7.50 : £22.50
- 3) Decrease 160 by 35%
104
- 4) Round 159 to 1sf **200**
- 5) Estimate 9.7×2.75
 $10 \times 3 = 30$
- 6) Expand $5x(x + 3)$
 $5x^2 + 15x$
- 7) Solve $10x + 3 = 62$
 $x = 5.9$
- 8) What is the LCM of 9 and 15
45
- 9) $10 - 2^2 \times 3 - 5$ **-7**
- 10) $\frac{3}{8}$ of 48 **18**

Need to know formulae

What is the formula for volume of a prism



cross section area \times length

Functional:

Mr Brown and his 2 children are going to London by train.

An adult ticket costs £24

A child ticket costs £12 **$24 + 12 + 12 = £48$**

Mr Brown has a Family Railcard which gets him 30% off.

Work out the total cost of the tickets when

Mr Brown uses his Family Railcard.

10% = £4.80

30% = £14.40

$48 - 14.40 = £33.60$

Problem Solving:

A pattern is made using identical rectangular tiles

$$A = 4 \times 3 \\ = 12\text{cm}^2$$

$$4 \times 12 \\ = 48\text{cm}^2$$

Quick 10 – Recall

- 1) 4.5×12
- 2) Share £30 in the ratio 1:3
- 3) Decrease 160 by 35%
- 4) Round 159 to 1sf
- 5) Estimate 9.7×2.75
- 6) Expand $5x(x + 3)$
- 7) Solve $10x + 3 = 62$
- 8) What is the LCM of 9 and 15
- 9) $10 - 2^2 \times 3 - 5$
- 10) $\frac{3}{8}$ of 48

L = 4cm

W = 3cm

Find the total area of the pattern

Quick 10 – Recall

- 1) 4.7×6.3 **29.61**
- 2) Share £63 in the ratio 7:2
£49 : £14
- 3) Decrease 90 by $\frac{2}{3}$ **30**
- 4) $12 - 20 \div 5 + \sqrt{16}$ **12**
- 5) 7 pens cost 56p. How much would 11 pens cost? **88p**
- 6) Expand $3x^2(x + 1)$ **$3x^3 + 3x^2$**
- 7) Solve $4x + 11 = 3$ **$x = -2$**
- 8) What is the LCM of 12 and 20
60
- 9) Factorise fully $20x^3 + 12x$
 $4x(5x^2 + 3)$
- 10) $\frac{7}{9} - \frac{2}{5} = \frac{17}{45}$

Need to know
formulae/facts
Area of a triangle?

$$\frac{\text{base} \times \text{height}}{2}$$

Use of a
calculator

Calculate **0.38**

$$\frac{2.6}{\sqrt{31} + 1.2}$$

Functional:

Three companies sell the same type of furniture.

The price of the furniture from Pooles of London is £1480

The price of the furniture from Jardins of Paris is €1980

The price of the furniture from Outways of New York is \$2250

The exchange rates are

$$£1 = €1.34$$

$$£1 = \$1.52$$

$$1980 \div 1.34 = £1477.61$$

$$2250 \div 1.52 = £1480.26$$

Which company sells this furniture at the lowest price?

You must show your working.

Jardins of Paris is cheapest

Problem Solving:

The diagram shows three identical shapes A, B and C.

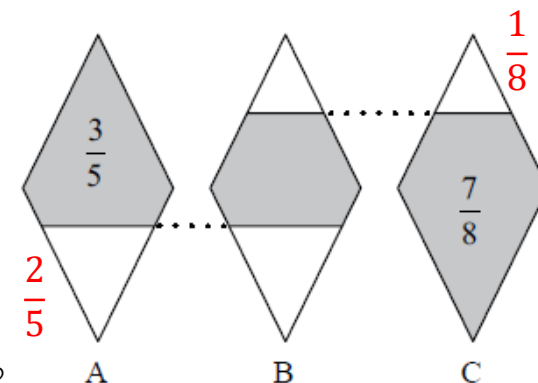
$\frac{3}{5}$ of shape A is shaded.

$\frac{7}{8}$ of shape C is shaded.

$$\frac{2}{5} + \frac{1}{8} = \frac{21}{40}$$

What fraction of shape B is shaded?

$$1 - \frac{21}{40} = \frac{19}{40}$$



Quick 10

- 1) 35% of £280 **£98**
- 2) Solve $3(2x + 3) = 27$ **3**
- 3) $1\frac{2}{3} + \frac{2}{5}$ **$2\frac{1}{15}$**
- 4) Simplify $x^3 \times x^5$ **x^8**
- 5) Share \$45 in the ratio 2:7 **10:35**
- 6) $2 + 3^2 \times 4 - 5$ **33**
- 7) $\frac{2}{5}$ of 35 **14** **$\frac{y-5}{3} = x$**
- 8) Make x the subject: $y = 3x + 5$
- 9) 4.56×2.1 **9.576**
- 10) $2(3x + 5) - 3(x - 2)$ **$3x + 16$**

How do you?...

Calculate compound interest?

Starting value \times multiplier^{repeats}

Functional:

Aleena is planning a trip for people at her Youth Club.

Here are the costs for the trip.

Transport	£230
Insurance	£50
Other costs	£30
Entry fee	£14 per person

$$14 \times 100 = \text{£}1400$$

$$1400 + 230 + 50 + 30 = \text{£}1710$$

Aleena charges £18 per ticket for the trip.

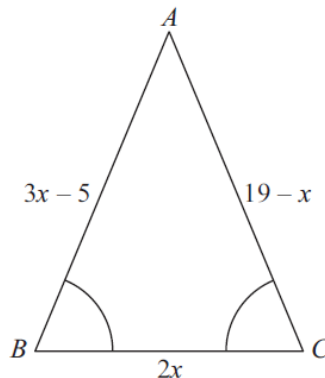
She sells 100 tickets.

$$100 \times 18 = \text{£}1800$$

Is there enough money from the ticket sales for Aleena to pay all the costs for the trip?
You must show your working.

Yes there is enough, £90 left over

Problem Solving:



Angle $ABC = \text{angle } BCA$.

Work out the perimeter of the triangle.

Give your answer as a number of centimetres.

$$3x - 5 = 19 - x$$

$$4x = 24$$

$$x = 6$$

$$\text{Perim} = 13 + 13 + 12 = 38\text{cm}$$

Quick 10

- 1) 45% of £180 **£81**
- 2) Solve $5(4x + 3) = 55$ **2**
- 3) $2\frac{2}{3} - 1\frac{2}{5}$ **$1\frac{4}{15}$**
- 4) Simplify $x^8 \div x^3$ **x^5**
- 5) Share \$81 in the ratio 4:5 **36:45**
- 6) $5 + 4^2 \times 2 - 10$ **27**
- 7) $\frac{3}{7}$ of 56 **$\frac{y+9}{2} = x$**
- 8) Make x the subject: $y = 2x - 3$
- 9) 67.6×3.5 **236.6**
- 10) $5(2x + 1) - 2(2x - 7)$ **$6x + 19$**

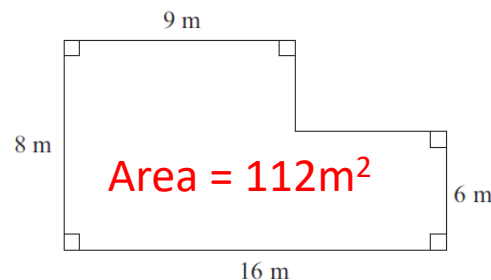
How do you?...

Find exterior and interior angles in regular polygons?

$$E = 360 \div \text{sides}$$

$$I = 180 - \text{ext}$$

The diagram shows the floor of a village hall.



Functional:

The caretaker needs to polish the floor.

One tin of polish normally costs £19
One tin of polish covers 12 m² of floor.

There is a discount of 30% off the cost of the polish.

The caretaker has £130

Has the caretaker got enough money to buy the polish for the floor?
You must show all your working.

$$112 \div 12 = 9.3$$

So 10 tins

$$10 \times 19 = \text{£}190$$

$$30\% = \text{£}57$$

$$190 - 57 = \text{£}133 \text{ so no}$$

Problem Solving:



There is a different whole number from 0 to 9 on each card.
The number on the last card is hidden.

The median of the numbers on the five cards is 4

In order: 3 4 6 7

Which whole numbers could be on the last card?

To make 4 middle number the missing card = 0, 1 or 2