

Spring Progress Check Revision Material

Year 8 Set 6 - 8

Pi

Test Date: Friday 19 Jan

How to revise for Maths?

- *Practise is key! Attached you will find some questions to help you do that.*
- *Once you've answered the questions – mark your work.*
- *If you get something wrong, look back on what you did and try work out where your mistake is. Unsure? Take your answers to your teacher or to Maths club on a Thursday and get help ahead of the test!*
- *Good luck!*

PROGRESS BAR Colour in the progress bar as you get questions correct.
Then fill in the progression chart on pages 102–105.

1 Work out

a $5476 + 689$

b $6714 - 883$

c $583 + 1470 + 6$

2 Calculate

a 37×18

b 258×25

3 Work out

a $-13 + 5$

b $-16 - 23$

4 Work out

a $(3 + 8) \times 7$

b $2 \times (3 - 10)$

c $(-2 + 7) \times 6$

d $(25 - 7) \div (1 - 4)$

5 Work out

a -3×8

b 4×-9

c $-45 \div 5$

d $42 \div -7$

6 Write each ratio in its simplest form.

a $5 : 20$

b $64 : 16 : 40$

7 Complete the equivalent ratio.

$5 : 12$

.....: 60

8 A recipe for 4 people uses 70 g of butter.

How much butter is needed for the same recipe for 14 people?

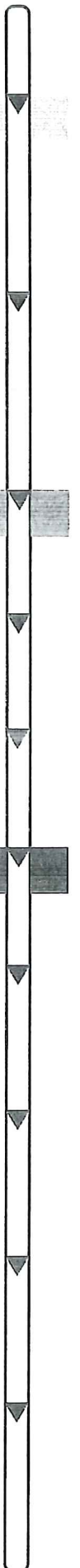
9 There is a ratio of 5 milk chocolates to 4 white chocolates in a box.

What fraction of the box are white chocolates?

10 The ratio of students to staff in a school is $25 : 3$.

The school employs 60 staff.

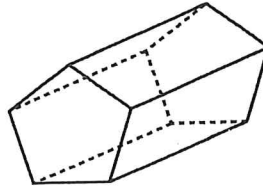
How many students are there?



PROGRESS BAR Colour in the progress bar as you get questions correct. Then fill in the progression chart on pages 102–105.

1 For this pentagonal prism, write down

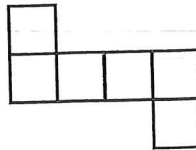
- a the number of faces
- b the number of edges
- c the number of vertices.



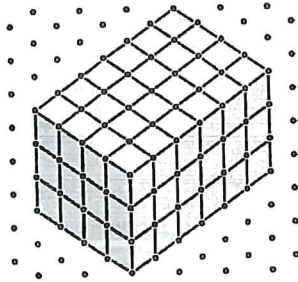
2 A solid has 6 rectangular faces, 12 edges and 8 vertices.
What 3D solid is being described?

3 This is a net of a cube.

- a Draw a tick next to two edges that meet when the net is folded up to make a cube.
- b Shade in two faces that are opposite when the net is folded up to make a cube.



4 This cuboid is made from centimetre cubes.
Work out its volume.

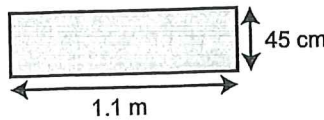


5 Work out these conversions.

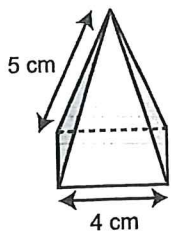
- a $370 \text{ ml} = \dots\dots\dots \text{ cm}^3$
- b $450 \text{ cm}^3 = \dots\dots\dots \text{ ml}$
- c $2.9 \text{ litres} = \dots\dots\dots \text{ cm}^3$
- d $600 \text{ cm}^3 = \dots\dots\dots \text{ litres}$
- e $700 \text{ cl} = \dots\dots\dots \text{ ml}$
- f $30 \text{ litres} = \dots\dots\dots \text{ cl}$



6 Work out the area of this rectangle in cm^2 .



7 Sketch a net of this pyramid. Label the lengths.



8 A cube has side length 24 mm. Work out

- a the surface area
- b the volume.

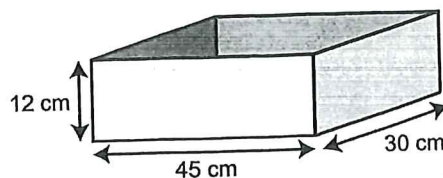


9 The diagram shows a tin in the shape of a cuboid.

- a Work out the capacity of the tin.

The tin is $\frac{1}{4}$ full of water.

- b Work out the amount of water in the tin in litres.

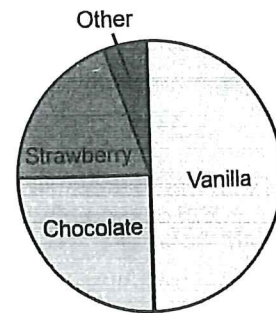


3 Unit test

PROGRESS BAR Colour in the progress bar as you get questions correct. Then fill in the progression chart on pages 102–105.

1 Annie did a survey of students' favourite ice cream flavours. The pie chart shows her results.

Favourite flavour ice cream



a What fraction of the students asked chose vanilla?

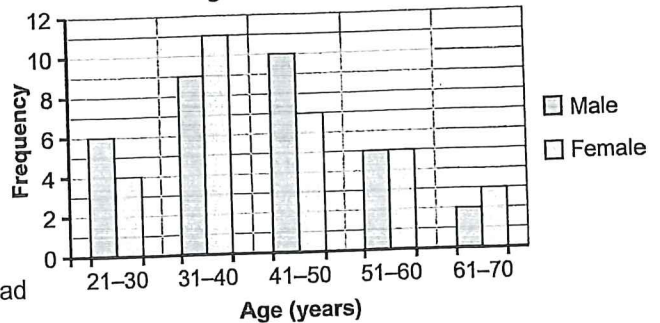
18 students chose chocolate.

b i How many students chose vanilla?

ii How many students were asked altogether?

2 The dual bar chart shows the ages of employees at a law firm. How many of the employees are more than 40 years old?

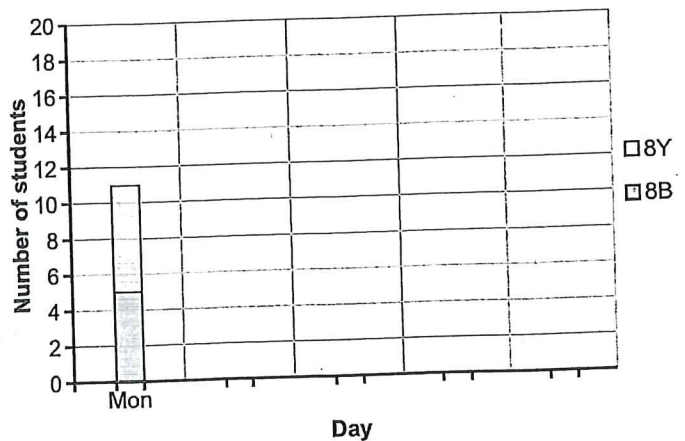
Ages of employees



3 The table shows the numbers of students who had school dinners in two Year 8 classes one week.

Day	8B	8Y
Monday	5	6
Tuesday	8	10
Wednesday	3	4
Thursday	7	5
Friday	10	9

Number of students having school dinners



a Complete the compound bar chart.

b What is the difference in the total number of students having school dinners in 8B and 8Y that week?

c Write a sentence comparing the numbers of students having school dinners in 8B and 8Y.

4 Alfie asked the students in his class how many phone calls they had made that week. Here are his results.

5 7 12 17 9 11 21 13 12 2
15 8 1 3 10 18 8 20 16 19
9 15 18 14 11

a Complete the grouped frequency table.

b How many students did he ask?

c What is the modal class?

d How many students had made fewer than 16 calls?

Number of phone calls	Tally	Frequency
1-5		
6-10		
11-15		
16-20		
21-25		

PROGRESS BAR Colour in the progress bar as you get questions correct. Then fill in the progression chart on pages 102–105.

1 Work out

a $5 \times (9 + 7)$

b $7(8 + 6)$

c $9(10 - 2)$

2 Simplify

a $5x - 8x$

b $7m + m - 13m$

c $p \times q$

d $n \div 3$

e $c \times d$

f $5 \times 4h$

g $10y \div 2$

h $\frac{18z}{3}$

3 Simplify

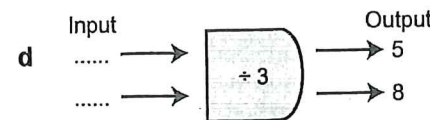
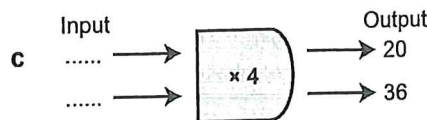
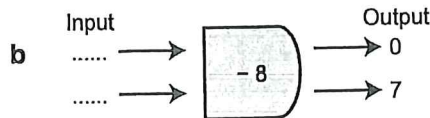
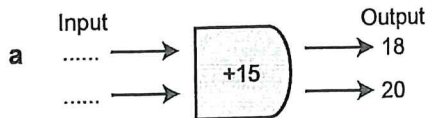
a $4x - 6y - x$

b $2c + 3d - 7c$

c $6g + 5h - 2g - 7h$

d $2x - 5y + 4y - 5x$

4 Work out the missing inputs for these function machines.



5 Solve these equations.

a $m + 7 = 20$

b $h - 6 = 11$

c $7k = 35$

d $\frac{e}{9} = 7$

6 Expand

a $3(x + 7)$

b $6(2 + a)$

c $8(y + 3)$

d $5(4 - a)$

7 This formula is used to work out the area (A) of a parallelogram:

$$A = b \times h$$

where b is the base and h is the height of the parallelogram. Work out the value of

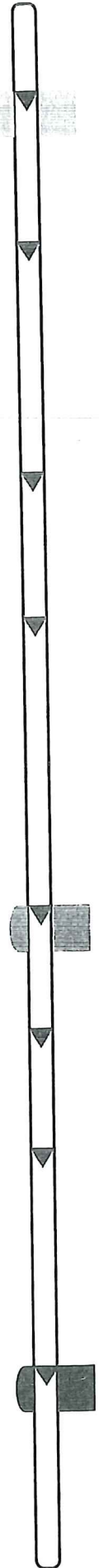
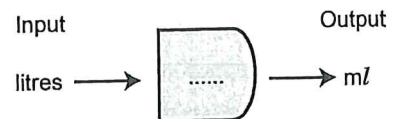
a A when $b = 6$ and $h = 7$

b b when $A = 45$ and $h = 9$

8 a Write in the missing function for this function machine.

b Three bottles have capacities of 2 litres, 5 litres and 1.5 litres. Use the function machine in part **a** to work out the capacity of each bottle in $m\text{l}$.

c A recipe uses 600 $m\text{l}$ of vegetable stock. How much vegetable stock is this in litres?



Adding and subtracting decimals

1 Work out

a $5.3 + 9.41$

b $6.18 + 37$

c $4.85 + 9.7$

d $47 + 6.58$

Guided

$$\begin{array}{r} \text{U. + h} \\ 5.30 \\ + 9.41 \\ \hline \end{array}$$

5.30 is the same as 5.3

$$\begin{array}{r} \text{T U. + h} \\ 6.18 \\ + 37.00 \\ \hline \end{array}$$

2 Work out

a $6.57 - 2.1$

b $29.4 - 3.16$

c $7.65 - 2.3$

d $31 - 8.27$

Guided

$$\begin{array}{r} \text{U. + h} \\ 6.57 \\ - 2.10 \\ \hline \end{array}$$

2.10 is the same as 2.1

$$\begin{array}{r} \text{T U. + h} \\ 29.40 \\ - 3.16 \\ \hline \end{array}$$

3 Work out

a $5.14 + 8.6 + 0.35$

Work out $5.14 + 8.6$ first.

b $7.13 - 2.6 + 5.8$

Work out $7.13 - 2.6$ first.

Worked example



Multiplying decimals

4 a Work out $\frac{1}{2}$ of 28.



b Work out 0.5×28 on your calculator. What do you notice?

5 Work out

a 0.5×38

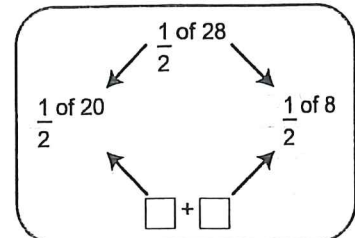
b 0.5×300

c 8.2×0.5

Guided

$= \frac{1}{2}$ of
=

$= \frac{1}{2}$ of
=



$8.2 \times 0.5 = 0.5 \times 8.2$

6 Work out

a 6×0.2

b 0.2×18

c 43×0.2

d 0.8×9



Use a number pattern.
 $6 \times 2 = 12$, $6 \times 0.2 = \square$

7 a Work out 6×37

b Complete the number pattern.

$6 \times 37 = \dots\dots\dots$

$6 \times 3.7 = \dots\dots\dots$

$6 \times 0.37 = \dots\dots\dots$

Use the grid method or the column method.

x	30	7	37
6			$\times 6$

8 Work out

a 8×0.43

b 5.27×6

c 6.14×7

9 Work out

a 32×4.5

$32 \times 45 =$	<input type="text"/>
$32 \times 4.5 =$	<input type="text"/>

b 41×3.5

10 Complete this number pattern.

$7 \times 0.5 =$

$0.7 \times 0.5 =$

$0.07 \times 0.5 =$

11 Work out

a 0.04×7

b 0.03×9

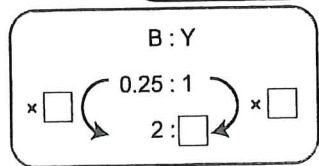
c 0.8×0.06



Use a number pattern.

$4 \times 7 =$	<input type="text"/>
$0.4 \times 7 =$	<input type="text"/>
$0.04 \times 7 =$	<input type="text"/>

12 Green paint is made by mixing blue paint and yellow paint in the ratio 0.25 : 1. How much yellow paint is mixed with 2 litres of blue paint?



Rounding and ordering decimals

13 Round each number to 2 decimal places.

a 7.314

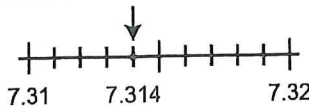
b 6.527

c 2.0409

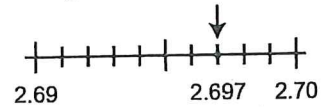
d 0.215

e 2.697

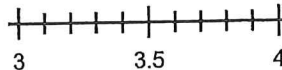
Which number, to 2 decimal places, is it closer to?



Your answer must have 2 decimal places. (The last digit can be zero.)



14 a Mark 3.405 and 3.8 on the number line.



b Which is larger, 3.405 or 3.8?

15 Which is the larger number in each pair?

Circle your answer.

a 6.35 (6.5)

b 3.047 3.2

c 0.62 0.267

First compare the units: (6).35 and (6).5
Both are the same so continue comparing.
Next compare the tenths: 6.(3)5 and 6.(5)

16 **Problem-solving** One number in each list is in the wrong place. Write each list in the correct order.

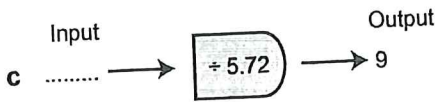
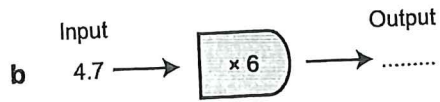
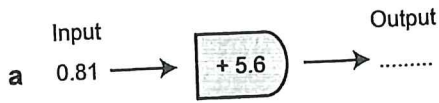
a 0.4 0.57 0.23 0.71

b 12.5 13.2 15.456 15.3

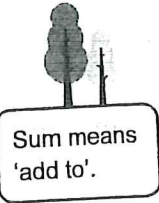
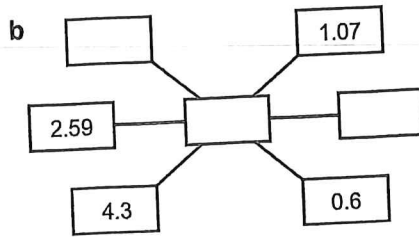
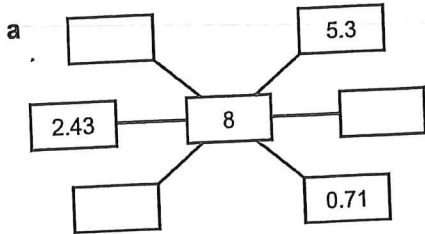
c 5.7 5.32 5.755 5.821

Strategy hint
Are they in order (smallest to largest)?

1 Find the missing value in each function machine.



2 In these number wheels, each pair of opposite numbers sums to the total in the centre. Complete the wheels.



3 Work out

a -0.73×4

b -8×3.92

c 7.34×-5

negative \times positive = negative

4 Here is a list of decimal numbers.

1.53 1.2 1.45 1.87 1.45

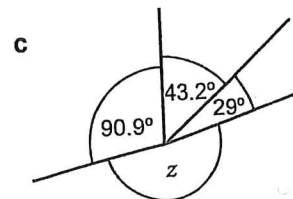
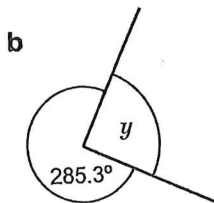
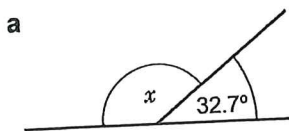
Work out

a the mode

b the median

c the mean.

5 Work out the size of the missing angles.



180.0

- 32.7

6 STEM To calculate the area of a parallelogram you can use the formula

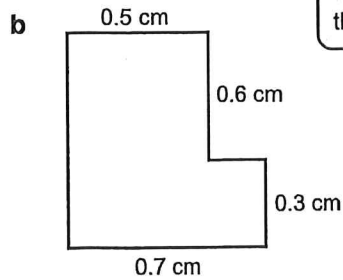
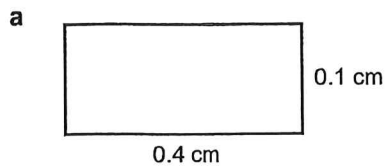
area = base \times height

Work out the area of a parallelogram when

a base = 3.72 m, height = 6 m

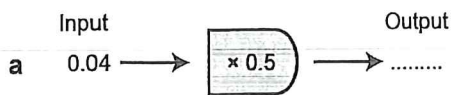
b base = 7 m, height = 5.83 m

7 Work out the perimeter and area of each shape.



In part b, to find the area, split the shape into two rectangles.

8 Find the missing value in each function machine.



9 Work out the surface area of this cube.



10 Write these masses in ascending order of size (smallest first).

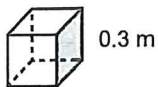
7.6 kg 7535 g 7.09 kg 6783 g 7.59 kg 6.9 kg

Convert them to the same units.
1000 g = 1 kg

11 Write these lengths in ascending order of size.

8.7 m 892 cm 8.512 m 8630 mm 85 cm 8.291 m 0.9 m

12 A cube has side length 0.3 m.
Work out its volume.



13 Work out

a $0.3 \times 0.4 + 9.1$ b $12.5 - 3 \times 0.6$ c $0.07 + 0.04 \times 0.8$

Strategy hint

Multiplication and division, then addition and subtraction.

14 a The product of two numbers is 0.64 and the sum is 1.6. What are the two numbers?

b The product of two numbers is 0.2 and the sum is 0.9. What are the two numbers?

PROGRESS BAR Colour in the progress bar as you get questions correct. Then fill in the progression chart on pages 102–105.

1 Work out

a $4.5 + 3.82$

b $0.76 + 21.3$

c $4.7 - 0.52$

d $16 - 0.61$

2 Work out

a 86×0.5

b 0.5×700

c 0.2×47

d 2.53×8

3 Work out

a $7.4 + 0.38 + 28$

b $8.9 - 0.62 + 15.3$

4 Work out

a 6.5×23

b 86×5.2

5 The thickness of a page in a book is 0.09 mm. A book has 64 pages. How thick is the book?

6 Round each number to 2 decimal places.

a 15.735

b 428.8134

c 2.4972

7 Work out

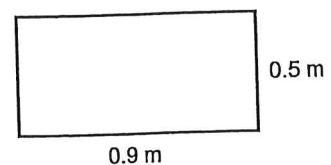
a 0.06×0.7

b 0.8×0.09

8 Write these numbers in ascending order (from smallest to largest).

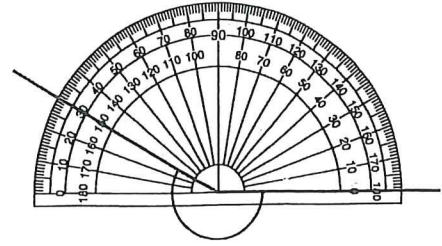
7.6 7.08 7.23 7.125 8.1 7.203

9 Work out the area and perimeter of this rectangle.



Measuring and drawing angles

- 1 **Reasoning** Ewan says, 'The size of the marked angle is 30°.'
Give a reason why he is wrong.
What is the correct answer?



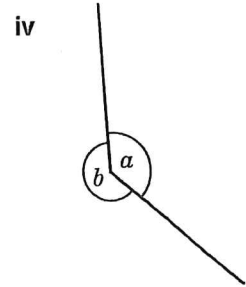
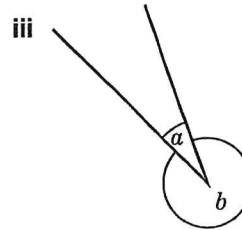
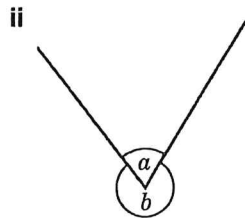
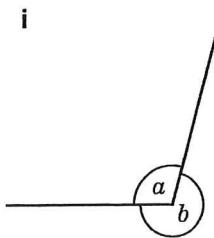
- 2 **a** Draw this angle accurately. **b** Draw an angle of 150°.



Worked example



- 3 **a** Use your protractor to measure angle a in each diagram.



- b** Work out the size of angle b .

Guided

$$b = 360^\circ - \dots = \dots$$

$$\text{Angle } b = 360^\circ - \text{angle } a$$

- c** Describe each angle as acute, obtuse or reflex.

- d** Complete the table.

Diagram	Angle a	Type of angle	Angle b	Type of angle
i				
ii				
iii				
iv				

- 4 Use a ruler and protractor to draw these reflex angles.

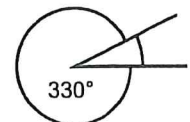
a 330°

b 220°

c 275°

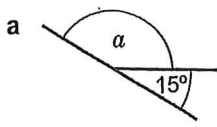


Sketch the reflex angle.
Work out the smaller angle.

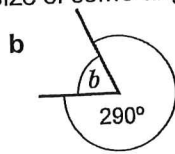


Calculating angles

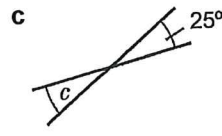
- 5 Helen has worked out the size of some angles.



$a = 165^\circ$



$b = 70^\circ$



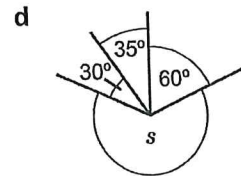
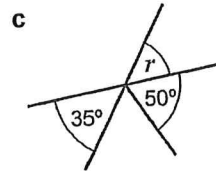
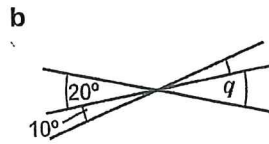
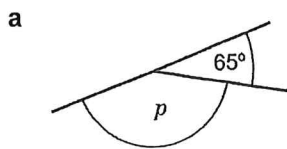
$c = 25^\circ$

Choose one of these reasons for each answer.

Write the correct angle by each reason.

- Vertically opposite angles are equal.
- Angles on a straight line add up to 180°
- Angles round a point add up to 360°

- 6 Work out the size of each angle. Give reasons for your answers.

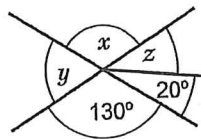


Use the reasons from Q5.

- 7 Find the size of angles x , y and z .

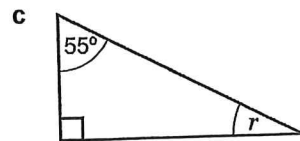
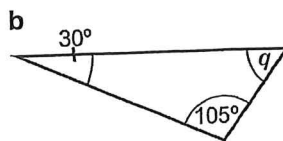
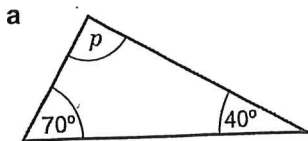
Guided
 $x = \dots$ (vertically opposite angles)
 $y = \dots$ (angles on a straight line)

$z = \dots - 20^\circ = \dots$ (vertically opposite angles)



Angles in a triangle add up to 180° .

- 8 Work out the size of the missing angle in each triangle.



Drawing triangles and nets

- 9 Follow these instructions to draw a triangle XYZ where $XY = 5$ cm, $YZ = 4$ cm and $\angle XYZ = 75^\circ$.

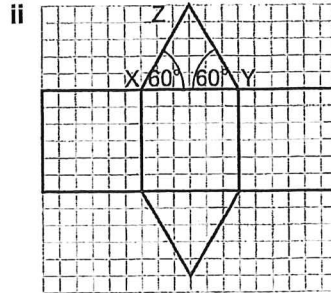
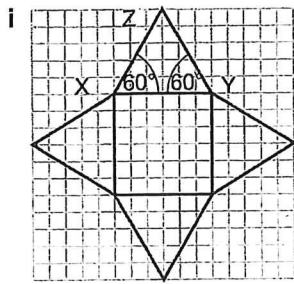
- Draw a line XY 5 cm long.
- Use a protractor to draw the given angle $\angle XYZ$.
- Draw in the other lines needed to complete the triangle accurately.

Strategy hint
Sketch the triangle first.

Worked example

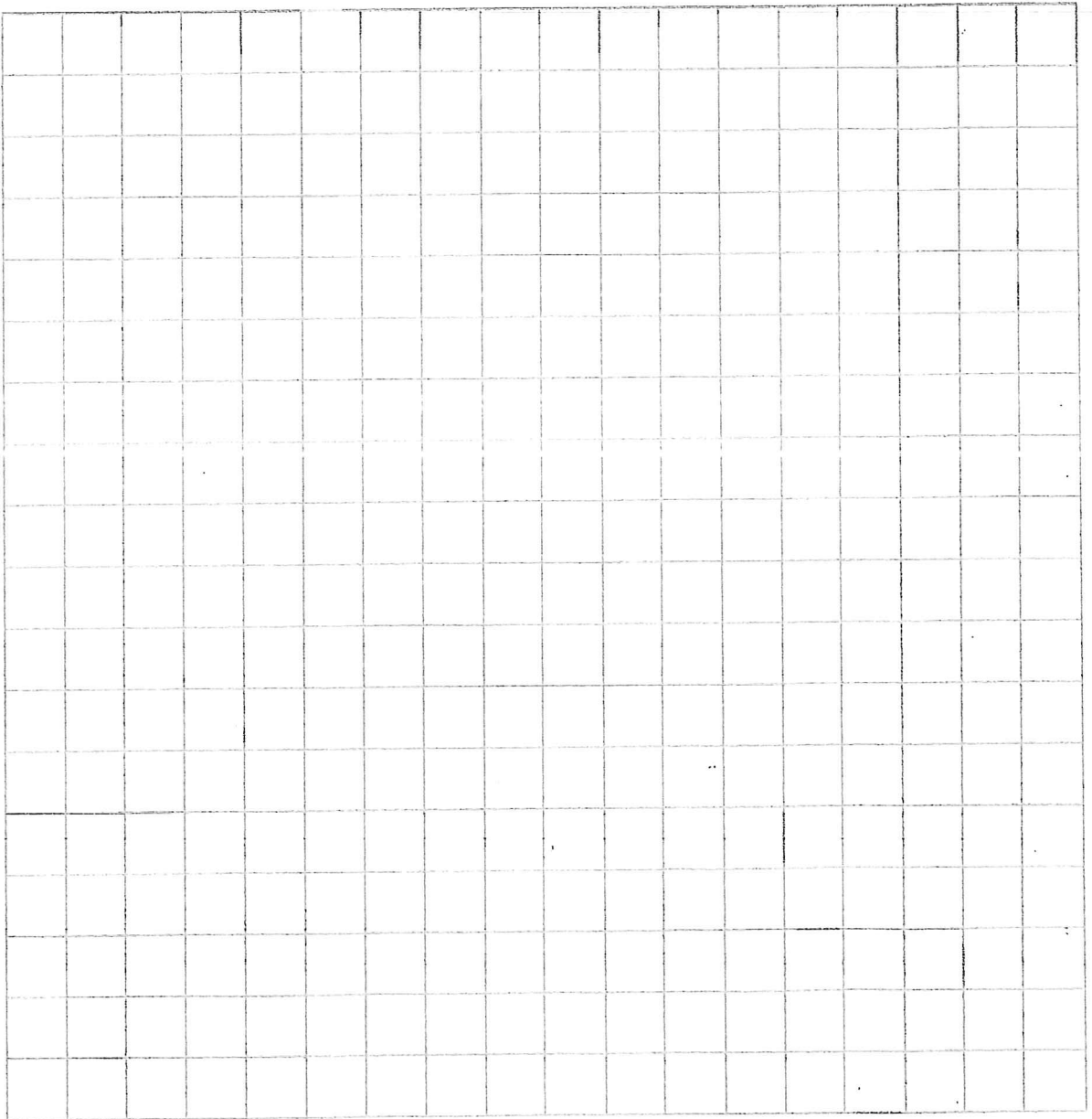


□ 10 The same triangle XYZ is used to make both of the nets below.



a Name the 3D solid that each net makes.

b Use a ruler and protractor to draw the net in part i accurately.



Year 8 P12 Answers

1 Unit test

- 1 a 6165
b 5831
c 2059
2 a 666
b 6450
3 a -8
b -39
4 a 77
b -14
c 30
d -6
5 a -24
b -36
c -9
d -6
6 a $1:4$
b $8:2:5$
7 $25:60$
8 245 g
9 $\frac{4}{9}$
10 500 students

2 Unit test

- 1 a 7 faces
b 15 edges
c 10 vertices
2 cuboid
3 a diagram with ticks next to any two edges that meet
b diagram with any two opposite faces shaded
4 72 cm^3
5 a 370 cm^3
b 450 ml
c 2900 cm^3
d 0.6 litres
e 7000 ml
f 3000 cl
6 4950 cm^2
7 labelled sketch of any working net of the square-based pyramid
8 a 3456 mm^2
b $13\,824 \text{ mm}^3$
9 a $16\,200 \text{ cm}^3$
b 4.05 litres

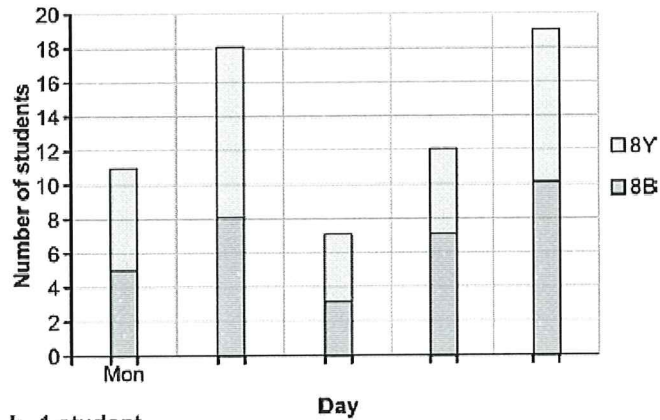
3 Unit test

1 a $\frac{1}{2}$

- b i 36 students
- ii 72 students

2 32 employees

3 a Number of students having school dinners



b 1 student

c e.g. Each day, the number of students having school dinners in 8B is quite similar to the number in 8Y.

4 a

Number of phone calls	Tally	Frequency
1-5		4
6-10		6
11-15		8
16-20		6
21-25		1

b 25 students

c 11-15 phone calls

d 18 students

4 Unit test

1 a 80

b 98

c 72

2 a $-3x$

b $-5m$

c pq

d $\frac{n}{6}$

e cd

f $20h$

g $5y$

h $6z$

3 a $3x - 6y$

b $-5c + 3d$

c $4g - 2h$

d $-3x - y$

4 a 3, 5

b 8, 15

c 5, 9

d 15, 24

5 a $m = 13$

b $h = 17$

c $k = 5$

d $e = 63$

6 a $3x + 21$

b $12 + 6a$

c $8y + 24$

d $20 - 5a$

7 a $A = 42$

b $b = 5$

8 a $\times 1000$

b 2000 ml, 5000 ml, 1500 ml

c 0.6 litres

5 Strengthen

Adding and subtracting decimals

1 a 14.71

b 43.18

c 14.55

d 53.58

2 a 4.47

b 26.24

c 5.35

d 22.73

3 a 14.09

b 10.33

Multiplying decimals

- 4 a 14
b It is the same answer as in part a.
- 5 a 19
b 150
c 4.1
- 6 a 1.2
b 3.6
c 8.6
d 7.2
- 7 a 222
b 222, 22.2, 2.22
- 8 a 3.44
b 31.62
c 42.98
- 9 a 144
b 143.5
- 10 a 3.5
b 0.35
c 0.035
- 11 a 0.28
b 0.27
c 0.048
- 12 8 litres

Rounding and ordering decimals

- 13 a 7.31
b 6.53
c 2.04
d 0.22
e 2.70

14 a 3.405 and 3.8 marked in the correct positions on the number line

b 3.8

15 b 3.2

c 0.62

16 a 0.23, 0.4, 0.57, 0.71

b 12.5, 13.2, 15.3, 15.456

c 5.32, 5.7, 5.755, 5.821

6 Strengthen

Measuring and drawing angles

1 e.g. The angle marked is a reflex angle, and 30° is an acute angle (which is less than 90°).
 210°

2 a 145° angle drawn accurately

b 150° angle drawn accurately

3 a i $a = 105^\circ$

ii $a = 70^\circ$

iii $a = 25^\circ$

iv $a = 135^\circ$

b i $b = 255^\circ$

ii $b = 290^\circ$

iii $b = 335^\circ$

iv $b = 225^\circ$

c i Angle a is obtuse and b is reflex.

ii Angle a is acute and b is reflex.

iii Angle a is acute and b is reflex.

iv Angle a is obtuse and b is reflex.

d

Diagram	Angle a	Type of angle	Angle b	Type of angle
i	105°	obtuse	255°	reflex
ii	70°	acute	290°	reflex
iii	25°	acute	335°	reflex
iv	135°	obtuse	225°	reflex

- 4 a 330° angle drawn accurately
b 220° angle drawn accurately
c 275° angle drawn accurately

Calculating angles

- 5 a angle c
b angle a
c angle b
- 6 a $p = 115^\circ$ (angles on a straight line add up to 180°)
b $q = 20^\circ$ (vertically opposite angles are equal)
c $r = 35^\circ$ (vertically opposite angles are equal)
d $s = 235^\circ$ (angles round a point add up to 360°)
- 7 $x = 130^\circ, y = 50^\circ, z = 30^\circ$
- 8 a $p = 70^\circ$
b $q = 45^\circ$
c $r = 35^\circ$

Drawing triangles and nets

- 9 triangle XYZ drawn accurately
- 10 a i square-based pyramid
ii triangular prism
b net of the square-based pyramid drawn accurately