Weekly check: Year 7 part 3

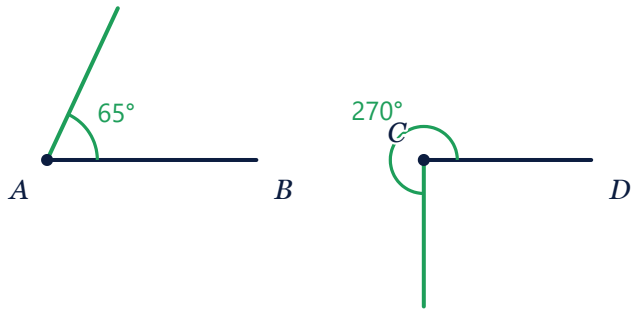
Worked solutions

KS3 Maths weekly check

This check online

1 a. At A, draw an angle of 65° above the line AB.

b. At C, draw an angle of 270° measured anticlockwise from the line CD (a three-quarter turn).



(2 marks)

a) protractor centre on A, 0° along AB

mark 65°, then join to A

angle of 65° drawn at A

b) 270° = 3 × 90°

three right angles anticlockwise from CD

the new arm points straight down

reflex angle of 270° at C

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2 a. A regular octagon has sides of length 7 cm. Work out its perimeter.

b. Work out the perimeter of the pentagon in the diagram.

c. A regular hexagon has a perimeter of 45 cm. Work out the length of one side.

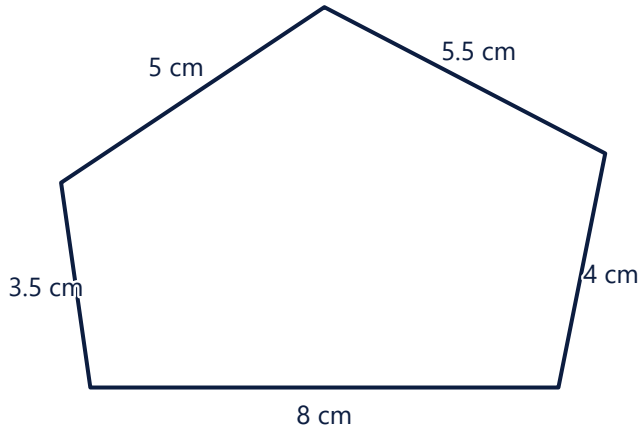


Diagram NOT accurately drawn

(3 marks)

a) 8 equal sides

$8 \times 7 = 56$

56 cm

b) add all 5 sides

$8 + 4 + 5.5 + 5 + 3.5 = 26$

26 cm

c) 6 equal sides

$45 \div 6 = 7.5$

7.5 cm

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3 There are 200 pupils in Year 7 at Hillside School.

Jamal asks 50 of the Year 7 pupils how they get to school. 30 of them say they walk.

a. Estimate how many of the 200 Year 7 pupils walk to school.

b. Jamal asked the 50 pupils as they arrived through the main gate, which is next to the bus stop. Give one reason why his estimate might not be good for the whole of Year 7.

(3 marks)

a) fraction of the sample who walk

$$\frac{30}{50} = \frac{3}{5}$$

use the same fraction of the population

$200 \div 5 = 40$

$3 \times 40 = 120$

about 120 pupils

b)

he only asked pupils at the gate by the bus stop

the sample may not represent all of Year 7

4 A cuboid has a volume of 180 cm^3.

The base of the cuboid measures 6 cm by 5 cm.

Work out the height of the cuboid.

(3 marks)

Base area = 6×5

Base area = $30\ cm^2$

V = base area $\times$ height

$30 \times h = 180$

$h = 6$

÷30 ÷30

6 cm

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5 150 students travel to school by bus, by car or by walking.

The two-way table shows some information.

	Bus	Car	Walk	Total
Year 7	24		30	80
Year 8		18		
Total	55			150

Complete the two-way table. (3 marks)

Year 7 Car = 80 - 24 - 30

Year 7 Car = 26

Year 7 Car: 26

Year 8 Total = 150 - 80

Year 8 Total = 70

Year 8 Total: 70

Year 8 Bus = 55 - 24

Year 8 Bus = 31

Year 8 Bus: 31

Year 8 Walk = 70 - 31 - 18

Year 8 Walk = 21

Year 8 Walk: 21

Car Total = 26 + 18

Car Total = 44

Car Total: 44

Walk Total = 30 + 21

Walk Total = 51

Walk Total: 51

Check

55 + 44 + 51 = 150

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6 Three angles meet at a point. Two of the angles are 145° and 118°. The third angle is x°.

Work out the value of x. Give a reason for your answer.

(2 marks)

Angles around a point add to 360°

$x + 145 + 118 = 360$

$x + 263 = 360$

-263 $x = 97$ -263

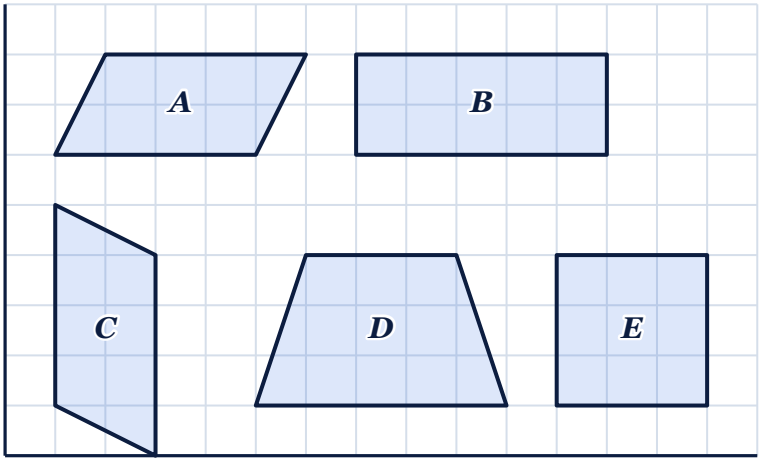
$x = 97$

Angles around a point add up to 360°

7 The diagram shows five quadrilaterals, labelled A, B, C, D and E, drawn on a centimetre grid.

a. Write down the letters of the pair of congruent quadrilaterals.

b. Write down the mathematical name of quadrilateral A.



(2 marks)

a)

A: sides 4 across, slant 1 across 2 up

C: sides 4 up, slant 2 across 1 up

Same shape and size, C is A turned

A and C

b)

2 pairs of parallel sides

No right angles

parallelogram

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8 A rectangle has length 9 cm and width 4 cm.

a. Work out the area of the rectangle.

b. Work out the perimeter of the rectangle.

(2 marks)

a)

Area = Length x width

Area = 9 x 4

Area = 36

$36\ cm^2$

b)

Perimeter = 9 + 4 + 9 + 4

Perimeter = 26

26 cm

9 A rectangle is made from three identical squares placed side by side in a row.

The perimeter of the rectangle is 48 cm.

Work out the area of the rectangle.

(3 marks)

Each square has side s

Rectangle: 3s long, s wide

Perimeter = 3s + s + 3s + s

Perimeter = 8s

8s = 48

÷8 s = 6 ÷8

Length = 3 x 6

Length = 18 cm

Rectangle is 18 cm by 6 cm

Area = 18 x 6

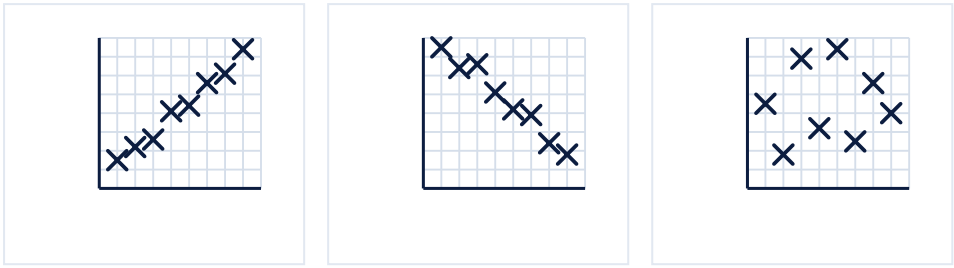
Area = 108

$108\ cm^2$

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10 Here are three scatter graphs, A, B and C.

For each graph, write down the type of correlation it shows.



A *B* *C*

(3 marks)

uphill = positive, downhill = negative, no pattern = none

A positive

B negative

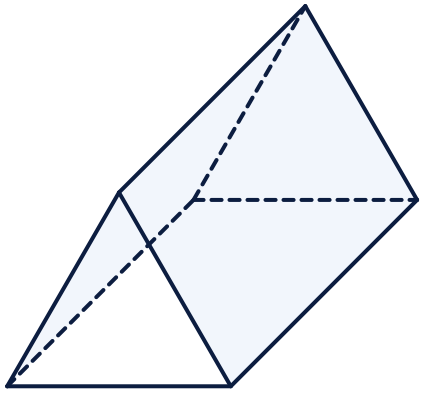
C no correlation

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11 Here is a triangular prism.

a. Write down the number of faces of a triangular prism.

b. Write down the number of edges of a triangular prism.



(2 marks)

a)

2 triangles + 3 rectangles

2 + 3 = 5

5

b)

3 on the front end, 3 on the back end

3 joining the two ends

3 + 3 + 3 = 9

9

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12 Part of a bus timetable is shown.

	Bus A	Bus B	Bus C
Bus station	07:40	08:05	08:35
Park Road	07:52	08:17	08:47
Library	08:03	08:28	08:58
School	08:15	08:40	09:10

a. How long does Bus B take to go from the bus station to school?

b. Maya gets on at Park Road. She must be at school by 08:30. Which is the latest bus she can catch?

c. Ollie arrives at the Library stop at 08:10. How long does he have to wait for the next bus? (3 marks)

a) Bus B column

08:05 to 08:40

40 - 5 = 35

35 minutes

b) arrival times at school

Bus A 08:15 Bus B 08:40 (too late)

Bus A at 07:52

c) next bus at the Library after 08:10

Bus B at 08:28

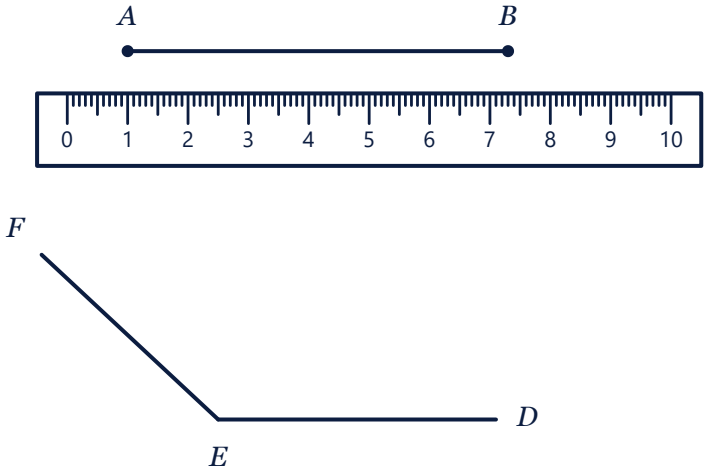
28 - 10 = 18

18 minutes

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13 a. The diagram shows line AB above a ruler marked in centimetres and millimetres. Write down the length of AB to the nearest millimetre.

b. Use a protractor to measure angle DEF.



(2 marks)

a) A is at 1 cm, B is at 7.3 cm

7.3 - 1 = 6.3

6.3 cm = 63 mm

b) centre on E, 0° along ED

obtuse, so more than 90°

137°

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14 A box of chocolates is a triangular prism.

The triangle at the end has a base of 10 cm and a height of 6 cm. The box is 15 cm long.

Work out the volume of the box.

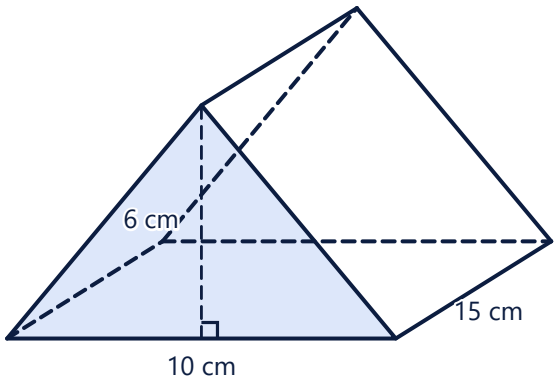


Diagram NOT accurately drawn

(2 marks)

Area of the triangle

$A = \frac{1}{2} \times 10 \times 6$

$= 30 \text{ cm}^2$

Volume = area x length

$V = 30 \times 15$

$= 450$

450 cm^3

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15 The table shows the number of children in each of 20 families.

Number of children	Frequency
0	3
1	8
2	6
3	3

Work out the mean number of children per family. (3 marks)

Number x frequency for each row

$0 \times 3 = 0$

$1 \times 8 = 8$

$2 \times 6 = 12$

$3 \times 3 = 9$

Total number of children

$0 + 8 + 12 + 9 = 29$

Divide by the number of families

$\text{Mean} = 29 \div 20$

$\text{Mean} = 1.45$

1.45

16 Ayesha has a cube of modelling clay with edges of 6 cm.
She reshapes all of the clay into a cuboid. The cuboid is 8 cm long and 3 cm wide.
Work out the height of the cuboid. (3 marks)

Volume of the cube

$V = 6 \times 6 \times 6$

$= 216 \text{ cm}^3$

Same volume for the cuboid

$8 \times 3 \times h = 216$

$24h = 216$

$\div 24 \qquad h = 9 \qquad \div 24$

9 cm

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17 The pictogram shows the number of cars washed at a garage on Friday and Saturday.

Key: ● represents 6 cars

Work out how many more cars were washed on Saturday than on Friday.

Friday	
Saturday	

Key:  = 6 cars

(2 marks)

1 circle = 6 cars

Friday: $3\frac{1}{2}$ circles

3.5 × 6 = 21 cars

Saturday: 5 circles

5 × 6 = 30 cars

30 − 21 = 9

9 more cars

18 a. Find the median of these numbers.

14 9 21 11 17 9 12

b. Here are the heights, in cm, of six pupils. Find the median height.

152 147 160 155 149 158

(3 marks)

a) put them in order first

9, 9, 11, 12, 14, 17, 21

7 numbers, so the middle is the 4th

12

b) in order

147, 149, 152, 155, 158, 160

two middle values

(152 + 155) ÷ 2 = 153.5

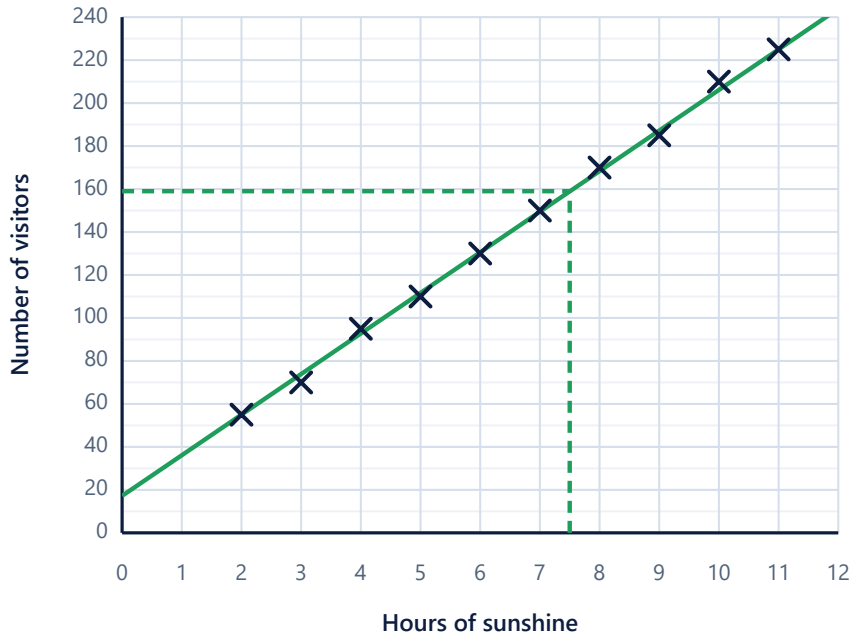
153.5 cm

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19 The scatter graph shows the number of hours of sunshine and the number of visitors to a country park on each of 10 days.

a. Describe the correlation shown by the scatter graph.

b. On another day there were 7.5 hours of sunshine. By drawing a line of best fit, estimate the number of visitors to the park on this day.



(3 marks)

a)

Points go up from bottom left to top right

Positive correlation

b)

Draw a line of best fit

Ruled line through the middle of the points

Go up from 7.5 hours to the line

Go across to the visitors axis

Reading: about 159

About 160 visitors (accept 150 to 175)

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20 A group of Year 7 pupils and a group of Year 8 pupils did the long jump.

	Median	Range
Year 7	2.9 m	1.2 m
Year 8	3.3 m	0.8 m

Make two comparisons between the long jumps of the two year groups. (2 marks)

compare the average

3.3 m > 2.9 m

on average Year 8 jumped further

compare the spread

0.8 m < 1.2 m

Year 8 were more consistent

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