Weekly check: Year 7 whole year

Worked solutions

KS3 Maths weekly check

This check online

1 Write down whether each of these is an **expression**, an **equation** or a **formula**.

a. $3x + 2$

b. $2y - 5 = 11$

c. $A = lw$

d. $4a + b^2$

(2 marks)

no equals sign = expression

equals sign, solve for one value = equation

a rule linking quantities = formula

a) expression

b) equation

c) formula

d) expression

2 At the school tuck shop, Callum buys 6 cereal bars at 74p each and 3 drinks at £1.15 each.

He pays with a £10 note.

How much change should he get?

(3 marks)

6 x 74 = 444p = £4.44

3 x 1.15 = £3.45

4.44 + 3.45 = 7.89

10.00 - 7.89 = 2.11

£2.11

3 Work out 15% of £60

(2 marks)

10% of £60 = £6

5% of £60 = £3

15% of £60 = 6 + 3

15% of £60 = £9

£9

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

4 Write <, > or = in each box to make each statement true.

a. −7 □ −3

b. −2.5 □ −2.05

c. 4 − 9 □ −5

(3 marks)

a) -7 is further below zero

$-7 < -3$

b) -2.50 is further below zero than -2.05

$-2.5 < -2.05$

c)

$4 - 9 = -5$

$4 - 9 = -5$

5 Here are four numbers.

6 11 9 14

Work out the mean of these numbers.

(2 marks)

Total = 6 + 11 + 9 + 14

Total = 40

Mean = 40 ÷ 4

Mean = 10

10

6 In a gym class, the ratio of the number of men to the number of women is 4 : 5.

There are 20 men in the class.

Work out the total number of people in the class.

(2 marks)

men : women = 4 : 5

4 parts = 20

1 part = 20 ÷ 4

1 part = 5

Women = 5 × 5

Women = 25

Total = 20 + 25

Total = 45

45

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

7 Work out $3^2 + 4 \times (7 - 2)$ (2 marks)

$3^2 + 4 \times (7 - 2)$

Brackets

$= 3^2 + 4 \times 5$

Indices

$= 9 + 4 \times 5$

Multiplication

$= 9 + 20$

Addition

$= 29$

$\boxed{29}$

8 ABC is a straight line. The point D lies above the line.

Triangle BCD is isosceles with $BD = CD$.

Angle $DBA = 134°$.

Work out the size of angle BDC. Give a reason for each stage of your working.

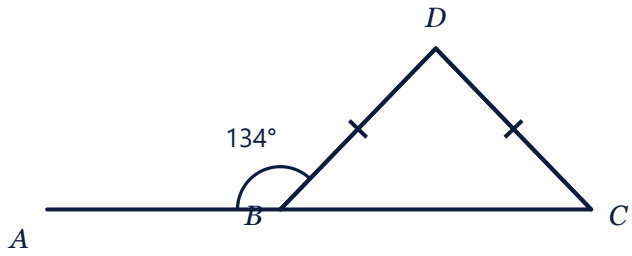


Diagram NOT accurately drawn

(4 marks)

Angles on a straight line add to 180°

$OBC = 180 - 134$

$OBC = 46°$

Isosceles: base angles are equal

$OCB = 46°$

Angles in a triangle add to 180°

$BOC = 180 - 46 - 46$

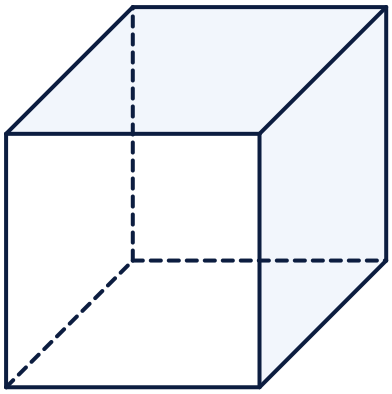
$BOC = 88°$

$\boxed{88°}$

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

9 A dice is a cube with edges of length 2.5 cm.

Work out the volume of the dice.



2.5 cm

(2 marks)

Volume = 2.5 × 2.5 × 2.5

= 6.25 × 2.5

= 15.625

$15.625\ cm^3$

10 A triangle has base 12 cm and perpendicular height 5 cm.

Work out the area of the triangle.

(2 marks)

$A = \frac{1}{2} \times b \times h$

$A = \frac{1}{2} \times 12 \times 5$

$A = 6 \times 5$

$A = 30$

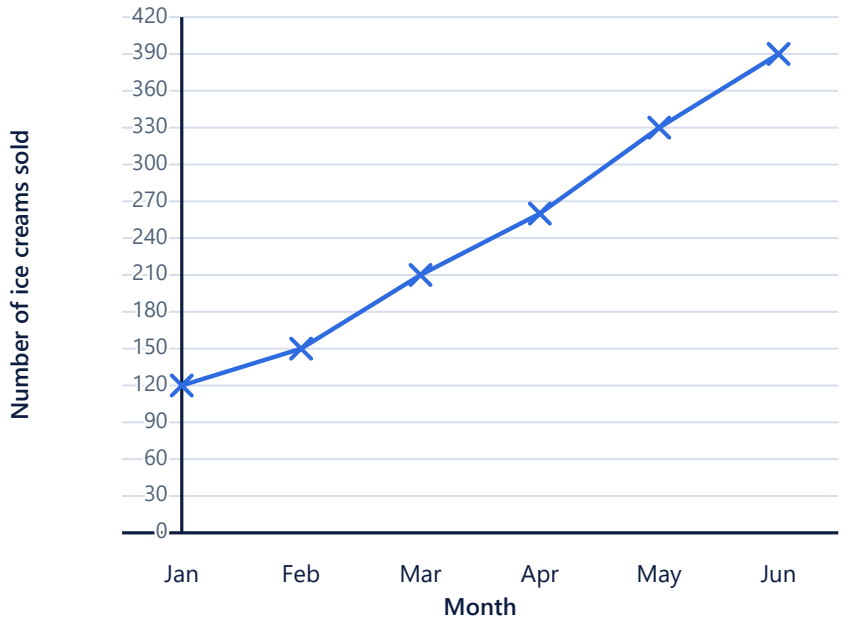
$30\ cm^2$

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

11 The time series graph shows the number of ice creams a kiosk sold each month from January to June.

a. Write down the number of ice creams sold in April.

b. Between which two consecutive months was the biggest increase in sales?



(2 marks)

a)

Read up from April: 260

260

b)

Increase between each pair of months

Jan to Feb: 150 - 120 = 30

Feb to Mar: 210 - 150 = 60

Mar to Apr: 260 - 210 = 50

Apr to May: 330 - 260 = 70

May to Jun: 390 - 330 = 60

Biggest: 70 (steepest line)

April and May

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

12 List all the prime numbers between 20 and 35. (2 marks)

Even numbers are not prime

Odd: 21, 23, 25, 27, 29, 31, 33

$21 = 3 \times 7$

$25 = 5 \times 5$

$27 = 3 \times 9$

$33 = 3 \times 11$

23, 29, 31 have no other factors

23, 29, 31

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

13 The diagram shows the net of a 3D solid. It is made from three rectangles and two equilateral triangles.

a. Write down the name of the solid.

b. Write down the number of edges the solid has.

c. Ravi says, "The solid has 6 faces." Is Ravi correct? Give a reason.

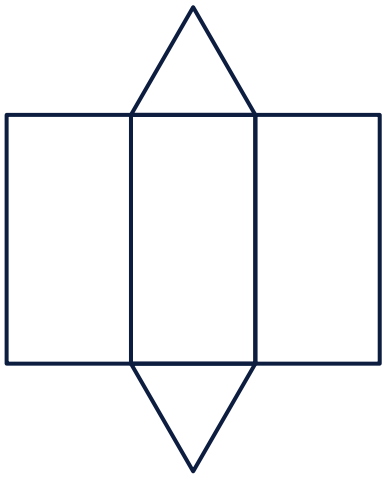


Diagram NOT accurately drawn

(3 marks)

a)

2 triangle ends, rectangles round the side

Triangular prism

b)

3 edges on each end: 3 + 3 = 6

3 edges along the length

6 + 3 = 9

9 edges

c)

Faces = shapes in the net

3 + 2 = 5

No, it has 5 faces

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

14 a. Solve $c - 8 = 11$

b. Solve $6d = 54$

c. Solve $e \div 4 = 7$

(3 marks)

a)

$c - 8 = 11$

$+8 \qquad +8$

$c = 19$

$\boxed{c = 19}$

b)

$6d = 54$

$\div 6 \qquad \div 6$

$d = 9$

$\boxed{d = 9}$

c)

$e \div 4 = 7$

$\times 4 \qquad \times 4$

$e = 28$

$\boxed{e = 28}$

15 Write down the type of correlation you would expect to see in a scatter graph of each of the following.

a. The daily temperature and the number of ice creams sold at a kiosk.

b. The age of a car and its value.

(2 marks)

a)

Hotter day → more ice creams sold

Both go up together

$\boxed{\text{Positive correlation}}$

b)

Older car → lower value

One goes up, the other goes down

$\boxed{\text{Negative correlation}}$

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

16 Work out $4\frac{2}{5} - 1\frac{3}{4}$

Give your answer as a mixed number in its simplest form. (3 marks)

Improper fractions

$$4\frac{2}{5} = \frac{22}{5}$$

$$1\frac{3}{4} = \frac{7}{4}$$

Common denominator 20

$$\frac{22}{5} = \frac{88}{20}$$

$$\frac{7}{4} = \frac{35}{20}$$

$$\frac{88}{20} - \frac{35}{20} = \frac{53}{20}$$

$53 \div 20 = 2$ remainder 13

$$\frac{53}{20} = 2\frac{13}{20}$$

$$\boxed{2\frac{13}{20}}$$

17 Simplify $6x + 3y - 2x + 5y$ (2 marks)

Collect x terms

$6x - 2x = 4x$

Collect y terms

$3y + 5y = 8y$

$$\boxed{4x + 8y}$$

18 Use a written method to work out $300.4 - 86.75$ (2 marks)

write 300.4 as 300.40

exchange across the zeros

$300.40 - 86.75 = 213.65$

check: $213.65 + 86.75 = 300.40$

$$\boxed{213.65}$$

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

19 Fill in the missing numbers in each sequence.

a. 4, 9, ___, 19, ___

b. 50, ___, 36, 29, ___

c. 3, 6, 12, ___, 48

(3 marks)

a) rule: + 5

9 + 5 = 14

19 + 5 = 24

14 and 24

b) rule: - 7

50 - 7 = 43

29 - 7 = 22

43 and 22

c) rule: × 2

12 × 2 = 24

check: 24 × 2 = 48

24

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.

20 Complete the table. Write each fraction in its simplest form.

	Fraction	Decimal	Percentage
a	$\frac{1}{4}$		
b		0.6	
c			12%
d	$\frac{1}{20}$		

(4 marks)

a) make the bottom 100

$\frac{1}{4} = \frac{25}{100}$

0.25 and 25%

b)

$0.6 = \frac{6}{10}$

$= \frac{3}{5}$

$0.6 \times 100 = 60$

$\frac{3}{5}$ and 60%

c) per cent means out of 100

$12\% = \frac{12}{100}$

$= \frac{3}{25}$

$\frac{3}{25}$ and 0.12

d) top and bottom x 5

$\frac{1}{20} = \frac{5}{100}$

0.05 and 5%

Free for classroom and home use: print, photocopy and share. Not for resale or re-hosting.