ALGEBRA - FORMULAS

Formulae

1 The charge for a phone calls (in pence) is given by the formula.

Charge = 1.2 x minutes or $C = 1.2m$

Find the charge for these calls.

a) 3 minutes

b) 10 minutes

2 The formula to convert Pounds to Euros is

Euros = 1.15 x Pounds or € = 1.15 x £

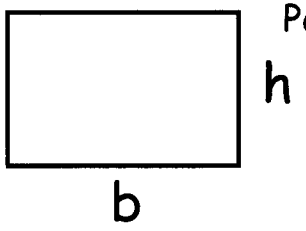
Converts thes amounts to Euros.

a) £50 b) £200

3 Speed = distance ÷ time

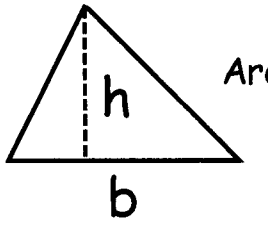
Distance = 63 miles
Time = 3 hours.
Find the speed.

4 Rectangle Area = bh
Perimeter = 2b + 2h



b = 7 cm and h = 4 cm. Find
a) Area =
b) Perimeter =

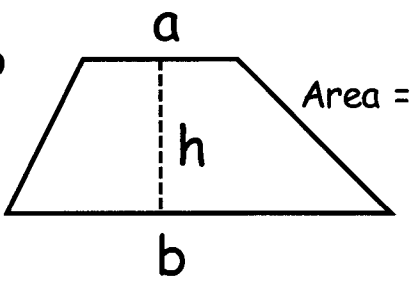
5



Area = bh ÷ 2

b = 6 cm and h = 4 cm. Find the area

6



Area = (a + b)h ÷ 2

a = 4 cm, b = 10 cm and h = 4 cm.
Find the area

7 $v = u + at$

u = 20, a = 5 and t = 2. Find v.

8 $s = ut + \frac{1}{2}at^2$

u = 10, a = 4 and t = 5. Find s.

9 $s = \frac{1}{2}(u + v)t$

u = 10, v = 14 and t = 3. Find s.

10 $F = 1.8C + 32$

F = temperature in °F
C = temperature in °C

a) Find F when C = 5 °C
b) Find F when C = 100 °C

There are b bears

There are d ducks

L stands for the total number of legs

Write a formula L =

If b = 5 and d = 3 what does L =?

there are u unicycles

there are b bikes

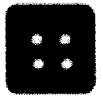
there are c cars (ignore spare wheel and steering wheel)

W stands for the total number of wheels. W =

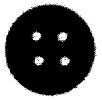
If u = 4, b = 3 and c = 5 what does W = ?

There are

t triangular buttons



s square buttons

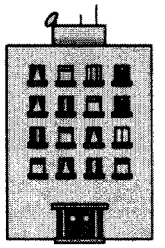


c circular buttons

H stands for the total number of holes.

H =

If t = 4, s = 2 and c = 5 what does H=?



f blocks of flats

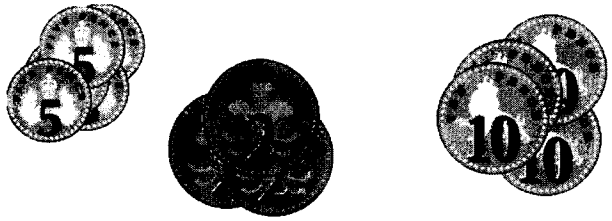
h houses

b bungalows

W stands for windows you can see. W =

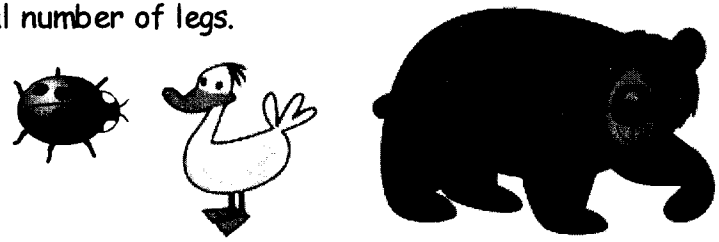
If f = 2, h = 10 and b = 7, what does W =?

1) There are 's' 2p pieces, 't' 5p pieces and 'u' 10p pieces.
Write a formula for the total amount of money.



2) On a mobile phone tarif. John pays 11p per text and 15p per minute for a call. He makes 'm' minutes of calls and sends 't' texts. Write a formula for the total cost of his bill.

3) There are 'L' ladybirds, 'd' ducks and 'b' bears. Write a formula for the total number of legs.



4) Pens cost 23p each. Pencils cost 12p. Sally buys 'p' pens and 'q' pencils.
Write a formula for the total cost of the pens and pencils.

5) Tariq has 'a' 10g weights and 'b' 20g weights. Write a formula for the total weight he has.

6) To cook a chicken it takes 30 minutes per kg plus an extra 20 minutes. Write a formula for the total time taken to cook a chicken weighing 'w' kg.

7) To go to the cinema it costs £4 per child and £6 per adult. 'a' adults and 'c' children go to the cinema. Write a formula for the total cost.

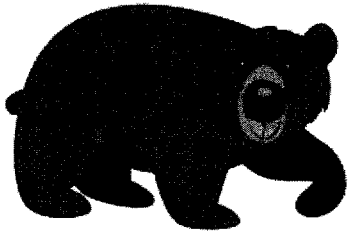
8) $C = 10s + 20$ Find C when s = 10

9) $T = 5a + 3b$ Find T when a=2 and b= 10

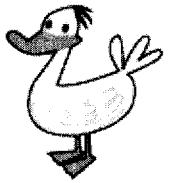
10) Using the formulas you have written find the answers when
a) Qu 1 s=4, t=3 and u=2
b) Qu 2 m=20 and t=30
c) Qu 3 L=2, d=4 and b=3
d) Qu 4 p=3 and q=3
e) Qu 5 a=3 and b=6
f) Qu 6 w=3kg
g) Qu 7 a=2 and c=4

LEGS

There are b bears



There are d ducks



L stands for the total number of legs

There are 6 bears (b = 6) and 3 ducks (d = 3). How many legs?

L = 10 and b = 2. d = ?

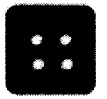
L = 20 and d = 4. b = ?

Write these formulas
L given b and d.
b given L and d.
d given L and b.

BUTTONS

should be t not r

There are  r triangular buttons

 s square buttons

H stands for the total number of holes.

If s = 2 and t = 5 what does H = ?

If H = 14 and t = 2 what does s =

If H = 18 and s = 3 what does t =

Write these formulas

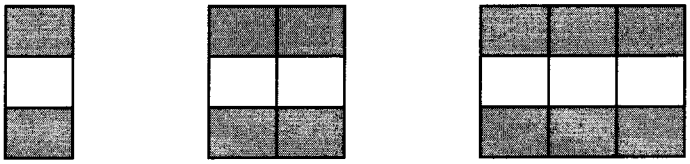
H = given s and t

s = given H and t

t = given H and s

Formulas

1 Look at the following patterns of grey and white squares.



a) Fill in this table

White squares (w)	1	2	3	4	5	6
Grey squares (g)	2	4	6			

b) How many grey squares would there be for 10 white squares? _____

c) How many white squares would there be for 30 grey squares? _____

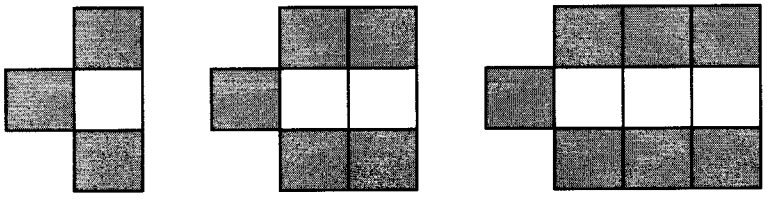
d) Write down a rule for finding the number of grey squares (g) if you know the number of white squares (w).

g =

e) Write down a rule for finding the number of white squares (w) if you know the number of grey squares (g).

w =

2 Look at the following patterns of grey and white squares.



a) Fill in this table

White squares (w)	1	2	3	4	5	6
Grey squares (g)	3	5	7			

b) How many grey squares would there be for 10 white squares? _____

c) How many white squares would there be for 41 grey squares? _____

d) Write down a rule for finding the number of grey squares (g) if you know the number of white squares (w). g =

e) Write down a rule for finding the number of white squares (w) if you know the number of grey squares (g). w =

Make x the subject of each of these formulas

1) $x + a = b$

2) $x - c = d$

3) $ex = f$

4) $\frac{x}{g} = h$

5) $\sqrt{x} = j$

6) $x^2 = k$

7) $mx + n = p$

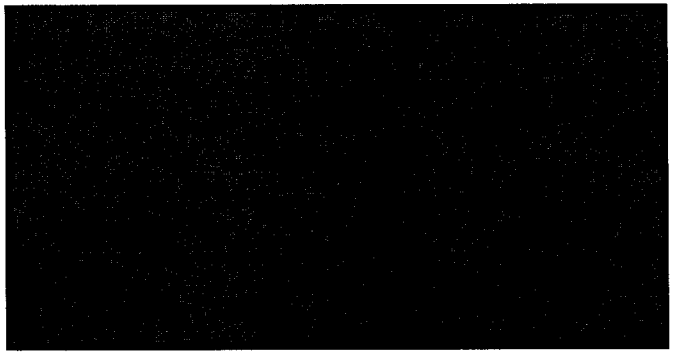
8) $\frac{x}{q} - s = t$

9) $ax + b^2 = c$

10) $abcx = d$

11) $4x - 9y = 8$

12) $a - x = b$



A = Area

A =

b =

P = Perimeter

P =

b =

Rearranging Formulas

Make 'x' the subject of these formulas

1) $A = x + y$

2) $s = 2x$

3) $w = 2x + y$

4) $d = 3x + 4y$

5) $e = \frac{x}{3}$

6) $y = x - 3d$

7) $y = 3x^2$

8) $a - x = y$

9) $d = \frac{x}{3} - h$

10) $y = \sqrt{x} - 2$

Make the letter in brackets the subject of these formulas. Write down what each formula is for, including defining each letter.

11) $C = \pi d$ (d)

12) $A = \pi r^2$ (r)

13) $V = L \times B \times H$ (L)

14) $S = \frac{D}{T}$ (T)

15) $V = \pi r^2 h$ (h)

16) $V = \pi r^2 h$ (r)

17) $V = \frac{1}{3}\pi r^2 h$ (h)

18) $V = \frac{1}{3}\pi r^2 h$ (r)

19) $D = \frac{M}{V}$ (M)

20) $V = \frac{4}{3}\pi r^3$ (r)

Make x the subject for 21 and 22

21) $ax = bx + y$

22) $ax - by = cx + dy$