SUBJECT:

UNIT: Solving

Solving Equations

Knowledge Organiser

One unknown

Solve 2x + 3 = 9

-3 -3
2x = 6
÷2 ÷2
x = 3

Solve 3x - 5 = 4

+4 +4
3x = 9
÷3 ÷3
x = 3

Solve 3x + 2 = - 7

-2 -2
3x = -9
÷3 ÷3
x = -3

Solve 2(x + 1) = 9

2x + 2 = 9
-2 - 2
2x = 7
÷2 ÷2
x = 3.5

Find the area of the square

3x + 4 = 13
-4 -4
3x = 9
÷3 ÷3
x = 3

Two unknowns

Solve 2x + 1 = x + 9

-1 -1
2x = x + 8
-x -x
x = 8

Solve 2x - 2 = x + 4

+2 +2
2x = x + 6
-x -x
x = 6

Solve 2x + 4 = x - 7

-4 -4
2x = x + 11
-x -x
x = 11

Solve 4x + 1 = x + 10

-1 - 1
4x = x + 9
-x -x
3x = 9
x = 3

Find the area of the square

2x + 4 = x + 8
-4 -4
2x = x + 4
-x -x
x = 4

If x = 4 then
2 x 4 + 4 = 12
And
4 + 8 = 12

Answer =
12 x 12 = 144

SUBJECT:
UNIT: Setting up and solving

Setting up equations & simultaneous equations

Knowledge Organiser

Key Words

- equation
- solve
- simultaneous

Solving Equations

Solve 2x + 1 = 7

-1 -1
2x = 6
÷2 ÷2
x = 3

Solve 2x + 3 = x + 6

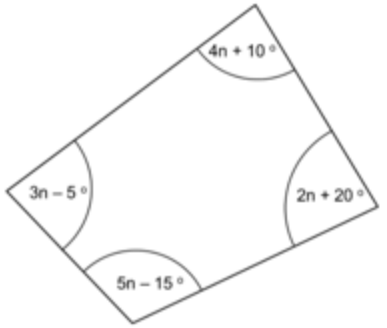
-3 -3
2x = x + 3
-x -x
x = 3

Solve 3x - 2 = x + 6

+2 +2
3x = x + 8
-x -x
2x = 8
+2 +2
x = 4

Setting up and solving equations

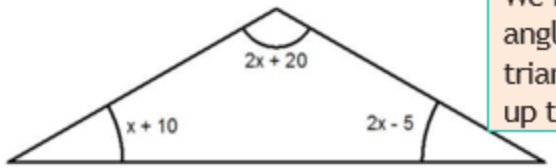
Find the value of n



We know that angles in quadrilaterals add up to 360°

3n - 5 + 5n - 15 + 4n + 10 + 2n + 20 = 360
14n + 10 = 360
14n = 350
n = 25°

Find the value of x



We know that angles in triangles add up to 180°

x + 10 + 2x + 20 + 2x - 5 = 180
5x + 25 = 180
5x = 155
x = 31°

Simultaneous Equations

Remember STOP
Same-sign, take away, opposite-sign, plus

1) 6x + y = 26
+ 2x - y = 6
8x = 32
x = 4
Substitute in x = 4
8 - y = 6
y = 2

2) 6x + y = 27
- 4x + y = 11
2x = 16
x = 8
Substitute in x = 8
32 + y = 11
y = -21

Problem Solving

A lamp and a bulb together cost £32.

The lamp costs £30 more than the bulb.

How much does the bulb cost?

Let the lamp = L
Let the bulb = B

L + B = 32
B + 30 = L

(B + 30) + B = 32
2B + 30 = 32
2B = 2
B = 1
If B = 1 then L + 1 = 32
So L = 31