Recap

1) $3x + 7 = 23$

$3x = 23 - 7$

$3x = 16$

$x = \frac{16}{3}$

$x = 5\frac{1}{3}$

2) $4x + 37 = 19$

$4x = 19 - 37$

$4x = -18$

$x = -\frac{18}{4}$

$x = -\frac{9}{2}$

$x = -4\frac{1}{2}$

Exercise

1) $5x + 27 = 42$

$5x = 42 - 27$

$5x = 15$

$x = \frac{15}{5}$

$x = 3$

2) $7x - 3 = 17$

$7x = 17 + 3$

$7x = 20$

$x = \frac{20}{7}$

$x = 2\frac{6}{7}$

Eqns with x on both sides

Ex 1 $8x - 11 = 5x + 19$

$8x - 5x = +19 + 11$

$3x = 30$

$x = \frac{30}{3}$

$x = 10$

Ex2

$$7x + 8 = 20 - 3x$$

$$7x + 3x = 20 - 8$$

$$10x = 12$$

$$x = \frac{12}{10}$$

$$x = \frac{6}{5}$$

$$x = 1\frac{1}{5}$$

Exercise

1) $9x - 8 = 5x + 32$

$9x - 5x = 32 + 8$

$4x = 40$

$x = \frac{40}{4}$

$x = 10$

2) $4x + 13 = 53 - x$

$4x + x = 53 - 13$

$5x = 40$

$x = \frac{40}{5}$

$x = 8$

Equations involving brackets

Ex1

$3(2x + 5) = 33$

$6x + 15 = 33$

$6x = 33 - 15$

$6x = 18$

$x = \frac{18}{6}$

$x = 3$

$3(2x + 5) = 33$

$2x + 5 = \frac{33}{3}$

$2x + 5 = 11$

$2x = 11 - 5$

$2x = 6$

$x = 3$

Ex2 $4(x+1) = 3(3x+5) - 7$

$4x + 4 = 9x + 15 - 7$

$4x - 9x = +15 - 7 - 4$

$-5x = 4$

$x = \frac{4}{-5}$

$x = -\frac{4}{5}$

Exercise

1) $5(2x-3) = 25$

$10x - 15 = 25$

$10x = 25 + 15$

$10x = 40$

$x = \frac{40}{10}$

$x = 4$

2) $7(x+2) = 8(2x-1) - 5$

$7x + 14 = 16x - 8 - 5$

$7x - 16x = -8 - 5 - 14$

$-9x = -27$

$x = \frac{-27}{-9}$

$x = 3$

Problem Solving

Ex1 Bill is twice as old as Alan. Colin is 5 years older than Bill. Colin is 17. How old is Alan?

Let Alan be x

Bill $= 2x$

Colin $= 2x + 5$

$$2x + 5 = 17$$
$$2x = 17 - 5$$
$$2x = 12$$
$$x = \frac{12}{2}$$
$$\underline{x = 6}$$

Ex 2 John's dad is three times as old as John. In 12 years time his dad will be only twice as old as John. How old is John now?

Let John be x years old now

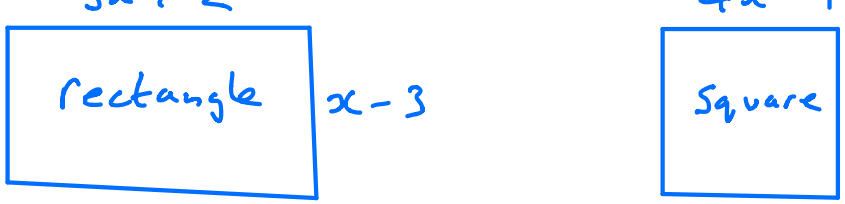
Dad now $= 3x$

In 12 years time John $= x + 12$

Dad $= 3x + 12$

$$3x + 12 = 2(x + 12)$$
$$3x + 12 = 2x + 24$$
$$3x - 2x = 24 - 12$$
$$\underline{x = 12}$$

Ex 3



Rectangle and square have same perimeter what is this perimeter

Perimeter of Square $4(4x-9)$

$= 16x - 36$

Perimeter of Rectangle

$= 3x+2 + x-3 + 3x+2 + x-3 = 8x - 2$

$$16x - 36 = 8x - 2$$

$$16x - 8x = -2 + 36$$

$$8x = 34$$

$$x = \frac{34}{8}$$

$$x = \frac{17}{4}$$

$$x = 4.25$$

Perimeter of each shape $= 8 \times 4.25 - 2$

$= 32$ ✓

or $16 \times 4.25 - 36 = 32$ ✓