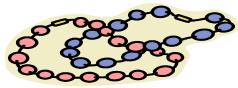
1. The sum of two numbers is 130, while their difference is 38. Find the two numbers.

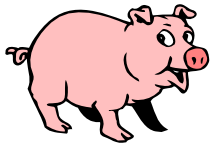
2. Becky and Peter's ages add to 53. If Becky is 3 years younger than Peter, what are their ages?

3. A necklace is made from 164 purple and blue beads. There are 8 more purple beads than blue beads. How many of each colour bead are there?



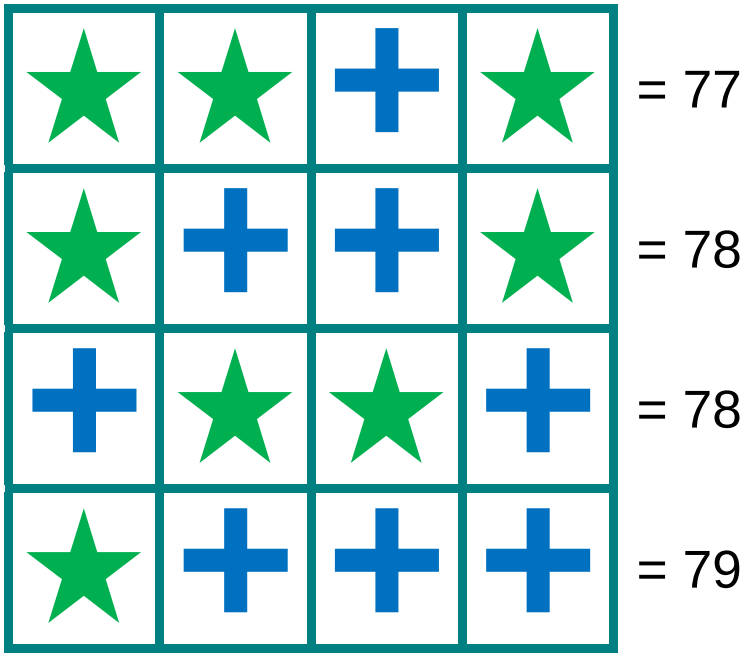
4. Ten Choco bars and six nutty bars cost £5. Three Choco bars and one Nutty bar cost £1.30. Find the cost of each chocolate bar.

5. Some chickens and pigs are in a field. How many of each animal are there if there are 32 heads and 80 legs in total?



6. Peter bought a mixture of large postcards (35p) and small postcards (29p). He bought 20 postcards in total, costing £6.28. How many of each size of postcard did he buy?

7. Find the value of each of the symbols in the grid:



8. Five apples and three pears cost 86 pence. Seven apples and five pears cost £1.30. Find the cost of each piece of fruit.

9. Two adults and three children went to the cinema, and the total cost was £32.40. Three adults and five children cost £51.20. What were the individual prices of adult and child tickets?

10. A slot machine takes only 20p and 50p coins. The machine contains a total of 140 coins worth £45.10. How many of each type of coin are in the machine?

Simultaneous scenarios

The sum of two numbers is 130, while their difference is 38. Find the two numbers.

Let the two numbers be x and y.

$x + y = 130$ (1)

$x - y = 38$ (2)

$2x = 168$ (1)+(2)

$x = 84$

$84 + y = 130$ (1)

$y = 46$

The two numbers are 38 and 46.

Becky and Peter's ages add to 53. If Becky is 3 years younger than Peter, what are their ages?

Let Becky's age be b and Peter's age be p.

$p + b = 53$ (1)

$p - b = 3$ (2)

$2p = 56$ (1)+(2)

$p = 28$

$28 + b = 53$ (1)

$b = 25$

Peter is 28, Becky is 25.

A necklace is made from 164 purple and blue beads. If there are 8 more purple beads than blue beads, how many of each colour are there?

Let b be the number of blue beads and p be the number of purple beads.

$p + b = 164$ (1)

$p - b = 8$ (2)

$2p = 172$ (1)+(2)

$p = 86$

$86 + b = 164$ (1)

$b = 78$

There are 86 purple beads and 78 blue beads.

Ten Choco bars and six nutty bars cost £5. Three Choco bars and one Nutty bar cost £1.30. Find the cost of each chocolate bar.

Let the Choco bars cost c pence and the Nutty bars cost n pence.

$10c + 6n = 500$ (1)

$3c + n = 130$ (2)

$10c + 6n = 500$ (1)

$18c + 6n = 780$ (2)× 6

$8c = 280$ (2)−(1)

$c = 35$

$3 \times 35 + n = 130$ (2)

$n = 25$

Choco bars cost 35p, Nutty bars cost 25p.

Some chickens and pigs are in a field. How many of each animal are there if there are 32 heads and 80 legs in total?

Let c be the number of chickens and p be the number of pigs.

$c + p = 32$ (1)

$2c + 4p = 80$ (2)

$2c + 2p = 64$ (1)× 2

$2c + 4p = 80$ (2)

$2p = 16$ (2)−(1)

$p = 8$

$c + 8 = 32$ (1)

$c = 24$

There are 24 chickens and 8 pigs.

Peter bought a mixture of large postcards (35p) and small postcards (29p). He bought 20 postcards in total, costing £6.28. How many of each size of postcard did he buy?

Let l be the number of large postcards and s be the number of small postcards.

Peter bought 8 large and 12 small postcards.

$l + s = 20$ (1)

$35l + 29s = 628$ (2)

$35l + 35s = 700$ (1) × 35

$35l + 29s = 628$ (2)

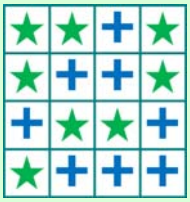
$6s = 72$ (1) − (2)

$s = 12$

$l + 12 = 20$ (1)

$l = 8$

Find the value of each of the symbols in the grid:



= 77

= 78

= 78

= 79

Let s be the value of a star and c be the value of a cross.

★ = 19

✚ = 20

$3s + c = 77$ (1)

$2s + 2c = 78$ (2)

$6s + 2c = 154$ (1) × 2

$2s + 2c = 78$ (2)

$4s = 76$ (1) − (2)

$s = 19$

$3 \times 19 + c = 77$ (1)

$c = 20$

Five apples and three pears cost 86 pence. Seven apples and five pears cost £1.30. Find the cost of each piece of fruit.

Let a be the number of apples and p be the number of pears.

Apples cost 10p, pears cost 12p.

$5a + 3p = 86$ (1)

$7a + 5p = 130$ (2)

$25a + 15p = 430$ (1) × 5

$21a + 15p = 390$ (2) × 3

$4a = 40$ (1) − (2)

$a = 10$

$5 \times 10 + 3p = 86$ (1)

$3p = 36$

$p = 12$

Two adults and three children went to the cinema, and the total cost was £32.40. Three adults and five children cost £51.20. What were the individual prices of adult and child tickets?

Let adults cost a pence and children cost c pence.

Adults cost £8.40 and children cost £5.20.

$2a + 3c = 3240$ (1)

$3a + 5c = 5120$ (2)

$6a + 9c = 9720$ (1) × 3

$6a + 10c = 10240$ (2) × 2

$c = 520$ (2) − (1)

$2a + 3 \times 520 = 3240$ (1)

$2a = 1680$

$a = 840$

A slot machine takes only 20p and 50p coins. The machine contains a total of 140 coins worth £45.10. How many of each type of coin are in the machine?

Let t be the number of 20p coins and f be the number of 50p coins.

There are 83 × 20p coins and 57 × 50p coins.

$t + f = 140$ (1)

$20t + 50f = 4510$ (2)

$2t + 2f = 280$ (1) × 2

$2t + 5f = 451$ (2) / 10

$3f = 171$ (2) − (1)

$f = 57$

$t + 57 = 140$ (1)

$t = 83$