

Number Nest Weekly Challenge



Warm up

- What is 20% of 580? **116**
- What is the fifth term of this sequence: 13, 7, 1... **-11**
- How long is 8.2m in mm? **8200 mm**
- Express $\frac{86}{36}$ as a simplified mixed fraction. **$2\frac{7}{18}$**

Main challenge

1. Wendy the witch has a cauldron which weighs 23 kg when it's full of potion, after she uses half of the potion for spells, the cauldron weighs 13 kg. What is the weight of an empty cauldron?

Let x be the weight of the potion.

Then $23 - \frac{x}{2} = 13$, so $x = 20$. The weight of the cauldron is $23 - 20 = 3$ kg

2. The diagram shows a poster which Harry has on his wall. When Harry was standing on his head, looking in a mirror on the opposite wall at the poster on the wall behind him, how many letters could still be read in the normal way?

- a) 2 **b) 3** c) 4 d) 5 e) 7



The last diagram shows what Harry sees so the answer is b) 3

3. Sophie keeps cats and owls as pets. She has 35 pets in total, when she counts the number of paws and claws, she finds that it's 106. How many cats does Sophie have?

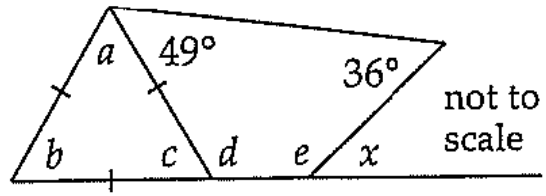
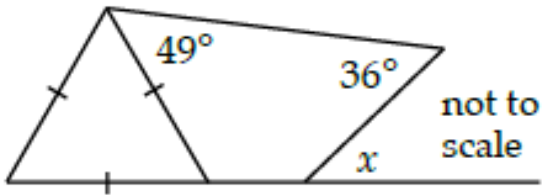
Let x be the number of cats and y be the number of owls.

Then

- $x + y = 35$**
- $4x + 2y = 106 \rightarrow 3. 2x + y = 53$**

Subtract equation 1. from 3. : $x = 18$

4. The diagram shows an equilateral triangle joined to a quadrilateral, two of whose angles are 36° and 49° . What is the size of angle x ?



$\angle a = \angle b = \angle c = 60^\circ$ Angles on a line sum up to 180° so $d = 180^\circ - c = 120^\circ$.

Angles inside a quadrilateral add up to 360° so $e = 360 - 49 - 36 - 120 = 155$.

So $x = 25^\circ$

Puzzle 1

Each Halloween object is worth a *different* integer value between 1 and 6 (inclusive).

Use the row totals to work out the value of each object.



				= 12
				= 20
				= 14
				= 16

Record the value of each Halloween object below..



















Puzzle 2

Each Halloween object is worth a *different* integer value up to (and including) 7.

Use the row totals to work out the value of each object.



				= 23
				= 20
				= 26
				= 24

Record the value of each Halloween object below..

