

# Number Nest Weekly Challenge



## Warm up

1. What is the missing number?  $558 - 41 = 517$
2. What is the missing number?  $-40 + 186 = 146$
3. What is  $9^3 - 9 \times 76$ ?  $9^3 - 9 \times 76 = 9 \times (81 - 76) = 9 \times 5 = 45$
4. Round to 2 decimal places: 1005.2809 **1005.28**

## Activity

1. Which of these calculations has the smallest answer?

a)  $4 \times 1$

b)  $3 \times 1^4$

c)  $1^3 - 1^6$

**d)  $1^4 - 2 \times 1^2$**

e)  $1 \times 1^2$

**a)  $4 \times 1 = 4$**

**b)  $3 \times 1^4 = 3$**

**c)  $1^3 - 1^6 = 0$**

**d)  $1^4 - 2 \times 1^2 = -1$**

**e)  $1 \times 1^2 = 1$**

2. Scott has 123 stamps and Tessa has 321 stamps. How many of her stamps must Tessa give to Scott so that he has half as many as she does?

**This means that Tessa must have  $\frac{2}{3}$  and Scott  $\frac{1}{3}$  of all the stamps they share.**

**$123 + 321 = 444$  stamps**

**$\frac{2}{3} \times 444 = 296$  stamps, so Tessa should have 296 stamps.**

**This means she needs to give  $321 - 296 = 25$  stamps to Scott.**



3. The average of the numbers R, I, N, G and S is 2025, K is 2025 greater than R. What is the average of numbers K, I, N, G and S?

**The total of R + I + N + G + S must be  $2025 \times 5$**

**Since K is 2025 greater than R, the total of K + I + N + G + S must be  $2025 \times 5 + 2025$ . So the average of numbers K, I, N, G, S is:**

$$\frac{2025 \times 6}{5} = 405 \times 6 = 2430$$

4. Zach took an exam. At the start of the exam, he noticed that the length of the paper in minutes was five times the number of questions on the paper. 45 minutes later, he had answered 11 questions and noticed that the number of minutes remaining was exactly six times the number of questions remaining. How long was the exam?

**This is a tricky question to solve without using algebra.**

**Let t be the length of the paper in minutes and q be the number of questions, then:**

**1)  $t = 5q$**  length of paper is 5 times the number of questions

**2)  $t - 45 = 6 \times (q - 11)$**  time remaining after 45 minutes is 6 times the number of questions

**Substituting 1) into 2):**

$$5q - 45 = 6q - 66$$

**$q = 21$ , using this answer and equation 1) to work out  $t = 5 \times 21 = 105$  mins**

### Puzzle

Complete the table with missing fractions, decimals and percentages.

Fractions	Decimals	Percentages
$\frac{37}{50}$	0.74	74 %
$\frac{23}{200}$	0.115	11.5 %
$\frac{6}{5}$	1.2	120 %
$\frac{3}{8}$	0.375	37.5%