



Fractions, Decimals and Percentages Word Problems

Bronze

1. A bag contains red and yellow beads. $\frac{1}{2}$ of the beads are red. Given that there are 18 beads in the bag, calculate the number of beads that are red.
2. In a class of 20 students, $\frac{1}{4}$ have a younger sibling. How many students in the class have a younger sibling?
3. During a sale, all items are advertised at 10% off the retail price. A coat usually costs £60. Work out the discount on this item.
4. A piece of ribbon measures 80cm. 10% of the ribbon is cut off. What length of ribbon is cut off?
5. In a survey, nine out of ten people said that they preferred summer over winter. Write this as a decimal.
6. A bag is advertised as having 20% off the retail price. If the bag usually costs £40, work out the discount.
7. There are 36 biscuits in a biscuit tin. Bella eats $\frac{1}{3}$ of the biscuits. How many biscuits does Bella eat?
8. In a group of school children, only 72% remember to bring a pencil to school. What percentage of students did not remember to bring a pencil?
9. A headteacher carries out a survey. He asks 1000 students what their favourite subject is. 700 students say that their favourite subject is maths. What fraction of students in this school say that their favourite subject is maths? Give your answer in its simplest form.
10. At a theme park, four out of every five people choose to buy a fast pass. What is this as a percentage?
11. In a leisure centre, 18% of people are swimming, 25% of people are in a fitness class and the rest are in the gym. What percentage of people at the leisure centre are in the gym?



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12. A bag of sweets contains 20 packets. $\frac{3}{4}$ of the packets are gummy sweets and the rest are hard-boiled. How many packets of gummy sweets are in the bag?
13. Maisie slices her birthday cake into several pieces. One slice is 10% of the whole cake and a different slice is $\frac{1}{8}$ of the whole cake. Which slice is larger? You must give a reason for your answer.
14. A coat is reduced in a sale by 10%. Given that the usual price of the coat is £120, calculate the sale price.
15. In a class of 30 students, $\frac{1}{5}$ go on a school trip. How many students do not go on the school trip?

Challenge:

Julia buys a car costing £8000. Each year, the car depreciates (goes down in value) by 10%. How much is the car worth after three years?



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Bronze **Answers**

1. A bag contains red and yellow beads. $\frac{1}{2}$ of the beads are red. Given that there are 18 beads in the bag, calculate the number of beads that are red.

$$18 \div 2 = 9$$

2. In a class of 20 students, $\frac{1}{4}$ have a younger sibling. How many students in the class have a younger sibling?

$$20 \div 4 = 5$$

3. During a sale, all items are advertised at 10% off the retail price. A coat usually costs £60. Work out the discount on this item.

$$£60 \div 10 = £6$$

4. A piece of ribbon measures 80cm. 10% of the ribbon is cut off. What length of ribbon is cut off?

$$80\text{cm} \div 10 = 8\text{cm}$$

5. In a survey, nine out of ten people said that they preferred summer over winter. Write this as a decimal.

$$9 \div 10 = 0.9$$

6. A bag is advertised as having 20% off the retail price. If the bag usually costs £40, work out the discount.

$$£40 \div 10 = £4$$

$$£4 \times 2 = £8$$

7. There are 36 biscuits in a biscuit tin. Bella eats $\frac{1}{3}$ of the biscuits. How many biscuits does Bella eat?

$$36 \div 3 = 12$$

8. In a group of school children, only 72% remember to bring a pencil to school. What percentage of students did not remember to bring a pencil?

$$100\% - 72\% = 28\%$$

9. A headteacher carries out a survey. He asks 1000 students what their favourite subject is. 700 students say that their favourite subject is maths. What fraction of students in this school say that their favourite subject is maths? Give your answer in its simplest form.

$$\frac{700}{1000} = \frac{7}{10}$$

10. At a theme park, four out of every five people choose to buy a fast pass. What is this as a percentage?

$$4 \div 5 \times 100 = 80\%$$



11. In a leisure centre, 18% of people are swimming, 25% of people are in a fitness class and the rest are in the gym. What percentage of people at the leisure centre are in the gym?

$$100\% - 18\% - 25\% = 57\%$$

12. A bag of sweets contains 20 packets. $\frac{3}{4}$ of the packets are gummy sweets and the rest are hard-boiled. How many packets of gummy sweets are in the bag?

$$20 \div 4 = 5$$

$$3 \times 5 = 15$$

13. Maisie slices her birthday cake into several pieces. One slice is 10% of the whole cake and a different slice is $\frac{1}{8}$ of the whole cake. Which slice is larger? You must give a reason for your answer.

$$\frac{1}{8} = 12.5\%$$

The $\frac{1}{8}$ slice is larger (or other suitable explanation).

14. A coat is reduced in a sale by 10%. Given that the usual price of the coat is £120, calculate the sale price.

$$£120 \div 10 = £12$$

$$£120 - £12 = £108$$

15. In a class of 30 students, $\frac{1}{5}$ go on a school trip. How many students do not go on the school trip?

$$30 \div 5 = 6$$

$$30 - 6 = 24 \text{ (or other suitable method).}$$

Challenge:

Julia buys a car costing £8000. Each year, the car depreciates (goes down in value) by 10%. How much is the car worth after three years?

$$£8000 \div 10 = £800$$

$$£8000 - £800 = £7200$$

$$£7200 \div 10 = £720$$

$$£7200 - £720 = £6480$$

$$£6480 \div 10 = £648$$

$$£6480 - £648 = £5832 \text{ (or other suitable method).}$$