



Fractions, Decimals and Percentages Word Problems Gold

1. A bag contains red and yellow beads. $\frac{3}{5}$ of the beads are red. Given that there are nine red beads, calculate the total number of beads in the bag.
2. In a class, $\frac{2}{7}$ of the students have a younger sibling. Given that 25 students do not have a younger sibling, calculate the total number of students in the class.
3. During a sale, all items are advertised at 10% off the retail price. A coat costs £54 in the sale. Work out the original price of the coat.
4. Jonny has a length of ribbon. He cuts off 15% of the ribbon, leaving a piece measuring 68cm. What was the original length of the ribbon?
5. In a survey, 11 out of 25 people said that they preferred summer over winter. Write this as a decimal.
6. The length of a rectangle increases by 10% and its height increases by 5%. Work out the total percentage increase in the area of the rectangle.
7. In a biscuit tin, 15% of the biscuits are chocolate, $\frac{1}{4}$ are plain and the rest are oat biscuits. Given that 36 biscuits are oat biscuits, work out the total number of biscuits in the tin.
8. In a group of school children, only 72% remember to bring a pencil to school. Of the remaining students, 10% remembered to bring a pen. What percentage of students in the school did not remember to bring a pen or a pencil to school?
9. A headteacher carries out a survey. He asks 800 students what their favourite subject is. 425 students say that their favourite subject is maths. What proportion of students in this school say that their favourite subject is maths? Give your answer as a decimal.
10. At a theme park, seven out of every 40 people choose to buy a fast pass. What is this as a percentage?



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11. In a leisure centre, 25% of people are swimming. The rest of the people are either in a fitness class or the gym. Given that the ratio of people in a fitness classes to the gym is 3:2, work out the percentage of people at the leisure centre that are in the gym.
12. In a bag of sweets, $\frac{1}{4}$ of the packets are gummy sweets, $\frac{2}{5}$ are marshmallows and the rest are hard-boiled. Given that seven sweets are hard-boiled, work out the total number of sweets in the bag.
13. Maisie slices her birthday cake into several pieces. One slice is 0.18 of the whole cake and a different slice is $\frac{4}{25}$ of the whole cake. Which slice is larger? Give a reason for your answer.
14. A coat is reduced in a sale by 18%. Given that the sale price of the coat is £65.60, calculate the original price.
15. In a class, 10% of the students stay at home while $\frac{5}{6}$ of the students go on a trip. The rest of the students stay at school. Given that 2 students stay at school, work out the total number of students in the class.

Challenge:

Julia buys a car costing £8000. Each year, the car depreciates (goes down in value) by 15%. After how many years is the car worth less than £5000?



Fractions, Decimals and Percentages Word Problems

Gold Answers

1. A bag contains red and yellow beads. $\frac{3}{5}$ of the beads are red. Given that there are nine red beads, calculate the total number of beads in the bag.

$$9 \div 3 = 3$$

$$3 \times 5 = 15$$

2. In a class, $\frac{2}{7}$ of the students have a younger sibling. Given that 25 students do not have a younger sibling, calculate the total number of students in the class.

$$25 \div 5 = 5$$

$$5 \times 7 = 35$$

3. During a sale, all items are advertised at 10% off the retail price. A coat costs £54 in the sale. Work out the original price of the coat.

$$£54 \div 0.9 = £60$$

4. Jonny has a length of ribbon. He cuts off 15% of the ribbon, leaving a piece measuring 68cm. What was the original length of the ribbon?

$$68\text{cm} \div 0.85 = 80\text{cm}$$

5. In a survey, 11 out of 25 people said that they preferred summer over winter. Write this as a decimal.

$$11 \div 25 = 0.44$$

6. The length of a rectangle increases by 10% and its height increases by 5%. Work out the total percentage increase in the area of the rectangle.

$$1.1 \times 1.05 = 1.155$$

15.5% increase.

7. In a biscuit tin, 15% of the biscuits are chocolate, $\frac{1}{4}$ are plain and the rest are oat biscuits. Given that 36 biscuits are oat biscuits, work out the total number of biscuits in the tin.

$$15\% + 25\% = 40\%$$

$$100\% - 40\% = 60\%$$

$$36 \div 60 \times 100 = 60$$

8. In a group of school children, only 72% remember to bring a pencil to school. Of the remaining students, 10% remembered to bring a pen. What percentage of students in the school did not remember to bring a pen or a pencil to school?

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

$$10\% \text{ of } 28\% = 2.8\%$$

$$28\% - 2.8\% = 25.2\%$$



9. A headteacher carries out a survey. He asks 800 students what their favourite subject is. 425 students say that their favourite subject is maths. What proportion of students in this school say that their favourite subject is maths? Give your answer as a decimal.

$$425 \div 800 = 0.53125$$

10. At a theme park, seven out of every 40 people choose to buy a fast pass. What is this as a percentage?

$$7 \div 40 \times 100 = 17.5\%$$

11. In a leisure centre, 25% of people are swimming. The rest of the people are either in a fitness class or the gym. Given that the ratio of people in a fitness classes to the gym is 3:2, work out the percentage of people at the leisure centre that are in the gym.

$$100\% - 25\% = 75\%$$

$$75\% \div 5 = 15\%$$

$$15\% \times 2 = 30\%$$

12. In a bag of sweets, $\frac{1}{4}$ of the packets are gummy sweets, $\frac{2}{5}$ are marshmallows and the rest are hard-boiled. Given that seven sweets are hard-boiled, work out the total number of sweets in the bag.

$$\frac{1}{4} + \frac{2}{5} = \frac{13}{20}$$

$$1 - \frac{13}{20} = \frac{7}{20}$$

There are 20 sweets in the bag.

13. Maisie slices her birthday cake into several pieces. One slice is 0.18 of the whole cake and a different slice is $\frac{4}{25}$ of the whole cake. Which slice is larger? Give a reason for your answer.

$$\frac{4}{25} = 16\%$$

The 0.18 slice is larger (or other suitable explanation).

14. A coat is reduced in a sale by 18%. Given that the sale price of the coat is £65.60, calculate the original price.

$$£65.60 \div 0.82 = £80$$

15. In a class, 10% of the students stay at home while $\frac{5}{6}$ of the students go on a trip. The rest of the students stay at school. Given that 2 students stay at school, work out the total number of students in the class.

$$\frac{1}{10} + \frac{5}{6} = \frac{14}{15}$$

$$1 - \frac{14}{15} = \frac{1}{15}$$

$$15 \times 2 = 30$$

**Challenge:**

Julia buys a car costing £8000. Each year, the car depreciates (goes down in value) by 15%. After how many years is the car worth less than £5000?

$$15\% \text{ of } \pounds 8000 = \pounds 1200$$

$$\pounds 8000 - \pounds 1200 = \pounds 6800$$

$$15\% \text{ of } \pounds 6800 = \pounds 1020$$

$$\pounds 6800 - \pounds 1020 = \pounds 5780$$

$$15\% \text{ of } \pounds 5780 = \pounds 867$$

$$\pounds 5780 - \pounds 867 = \pounds 4913$$

3 years (or other suitable method).