GCSE Maths – Number

Fractional and Percentage Operators
Worksheet

NOTES

SOLUTIONS

This worksheet will show you how to work out different types of questions on fractional and percentage operators. Each section contains a worked example, a question with hints and then questions for you to work through on your own.

Section A

Worked Example 1

What is 15 as a percentage of 75?

Step 1: Find the multiplier by dividing the smaller number by the larger number.

$$15 \div 75 = 0.2$$

Step 2: Convert the multiplier into a percentage by multiplying by 100.

$$0.2 \times 100 = \mathbf{20}\%$$

Worked Example 2

What is 67% of 476?

Step 1: Find the multiplier by dividing the percentage by 100.

$$67 \div 100 = 0.67$$

Step 2: Multiply the given number (476) by the multiplier.

$$0.67 \times 476 = \mathbf{318.92}$$

Guided Example

What is 32.44% of 0.75?

Step 1: Find the multiplier by dividing the percentage by 100.

Step 2: Apply the multiplier to the original value.

Now it's your turn!

If you get stuck, look back at the worked and guided examples.

1. What is 60% of 140?

2. What is 12.5% of 32?

3. What is 17.5% of 80?

4. What is 10 as a percentage of 50?

5. What is 36 as a percentage of 45?

6. What is 1.5% of £75?

7. What is 74% of £3.20?

Worked Example

There is £23,000 in a bank account. After 1 year this amount has gained 13% interest, how much money is now in this bank account?

Step 1: Identify the percentage you need to find.

Since we want to know the original amount with the added 13%*, we are interested in*

$$100\% + 13\% = 113\%$$

Step 2: Find the multiplier by dividing the required percentage by 100.

$$113 \div 100 = 1.13$$

Step 3: Multiply the given value (£23,000) by our multiplier.

$$1.13 \times 23000 = £25990$$

Guided Example

How much is £80 worth after an increase of 20%?

Step 1: Identify the percentage you need to find.

Step 2: Find the multiplier by dividing the percentage by 100.

Step 3: Multiply the given value by our multiplier.

Now it's your turn!
If you get stuck, look back at the worked and guided examples.

8. How much is £46 after an increase of 2%?

9. How much is £70 after an increase of 5.5%?

10. How much is $840 after an increase of 125%?

11. Increase 40 miles by 43%.

12. On weekdays it costs £5.50 per hour to rent a golf club. On Tuesdays the cost is 35% more. How much does it cost to rent a club for 3 hours on a Tuesday?

13. An empty house was bought at £34,000 and is refurbished such that its value rises to 936% of its original price. How much is it worth now?

Section C – Percentage Change

Worked Example

What is the percentage change from 40 to 60?

$$Percentage\ change = \frac{Change}{Original\ number} \times 100$$

Step 1: Find the change.

$$Change = 60 - 40 - 20$$

Step 2: Identify the original number.

$$Original\ number = 40$$

Step 3: Input the numbers into the percentage change formula.

$$Percentage\ change = \frac{20}{40} \times 100 = 50\%$$

Guided Example

Blake counts 24 red cars on Monday and 27 red cars on Tuesday. What is the percentage increase in the number of red cars Blake sees? Give your answer to one decimal place.

Step 1: Find the change.

Step 2: Identify the original number.

Step 3: Input the numbers into the percentage change formula.

Now it's your turn!
If you get stuck, look back at the worked and guided examples.

14. What is the percentage change from 37.8 to 28?

15. What is the percentage change from 71 to 90?

16. The price of a bag of clams drops from £40 to £15. What is the percentage change?

17. Apple's annual profits increase from £320m to £475m. What percentage increase is this?

18. What is 50 after an increase of 25%?

19. What is £103 after a decrease of 30%?

20. Adnan has a rectangular shed in his garden. He decides to enlarge the shed by increasing both its length and width by 34%. What is the percentage increase in the floor area of the shed? (Challenge question)

Worked Example

Calculate $\frac{4}{9}$ of 72

Step 1: Multiply the numerators and denominators of both values.

$$\frac{4}{9} \times \frac{72}{1} = \frac{4 \times 72}{9 \times 1} = \frac{288}{9}$$

Step 2: Simplify the resulting fraction if possible.

$$\frac{288}{9} = 32$$

Guided Example

Calculate $\frac{1}{3}$ of $\frac{82}{17}$

Step 1: Multiply the numerators and denominators of both values.

Step 2: Simplify the resulting fraction if possible.

Now it's your turn!

If you get stuck, look back at the worked and guided examples.

21. Calculate $\frac{1}{3}$ of 24

22. Find $\frac{8}{5}$ of 80

23. There were 8,701 people at the Arsenal versus Blackburn Rovers. Of those attending, four-sevenths were male. Calculate how many people were female.

24. London zoo has 75 zebras, $\frac{5}{6}$ of them are white with black stripes. How many are black with white stripes?

25. On a flight to Nepal, $\frac{1}{3}$ passengers are British and $\frac{1}{4}$ of passengers are Nepalese. How many passengers are neither British nor Nepalese?

26. Sarah has a collection of spiders. For every 34 spiders she has, 3 of them will have 9 legs instead of 8. Sarah has a total of 170 spiders. How many have 8 legs? How many have 9 legs?