Fractions, Decimals and Percentages 1: Follow-up Sheet

If you got question 1 wrong, read and complete Section 1
If you got question 2 wrong, read and complete Section 2

etc.

Section 1

To find $\frac{2}{3}$ of 546:-

First find one third by dividing by three (546 ÷ 3 = 182)

Then multiply your answer by two to get two thirds (182 × 2 = 364)

1 Copy and complete:-

a) To find $\frac{3}{4}$ of a number, divide it by 4 and multiply the answer by ___.

b) To find $\frac{3}{5}$ of a number, divide it by ___ and multiply the answer by 3.

c) To find $\frac{4}{7}$ of a number, divide it by ___ and multiply the answer by ___.

d) To find $\frac{5}{8}$ of a number, divide it by ___ and multiply the answer by ___.

e) To find — of a number, divide it by 6 and multiply the answer by 5.

2 Carry out these calculations:-

a) $\frac{2}{5}$ of 545 **b)** $\frac{3}{4}$ of 548 **c)** $\frac{3}{8}$ of 544

d) $\frac{6}{7}$ of 504 **e)** $\frac{7}{9}$ of 540 **f)** $\frac{5}{6}$ of 546

Section 2

Everyone should remember that:-

$$50\% = \frac{1}{2} \text{ (divide by 2)}$$

$$25\% = \frac{1}{4} \text{ (divide by 4)}$$

$$75\% = \frac{3}{4} \text{ (divide by 4 and multiply by 3)}$$

$$10\% = \frac{1}{10} \text{ (divide by 10)}$$

Find 25% of 456.

25% is a quarter of 456 so the number should be divided by 4.

Calculate:-

1) 25% of 176	**2)** 50% of 654	**3)** 75% of 348	**4)** 10% of 450
5) 50% of 564	**6)** 25% of 416	**7)** 10% of 300	**8)** 75% of 844
9) 75% of 408	**10)** 10% of 8000	**11)** 25% of 956	**12)** 50% of 456

Section 3

To find 60% of 180:-

Find 10% by dividing by 10 (180 ÷ 10 = 18)

Find 60% by multiplying by 6 (6 × 18 = 108)

To find 30% of 776:-

Find 10% by dividing by 10 (776 ÷ 10 = 77.6)

Find 30% by multiplying by 3 (3 × 77.6 = 232.8)

Calculate:-

1) 20% of 170	**2)** 30% of 650	**3)** 40% of 340	**4)** 70% of 450
5) 80% of 6500	**6)** 90% of 4000	**7)** 40% of 300	**8)** 80% of 8400
9) 60% of 444	**10)** 70% of 812	**11)** 30% of 956	**12)** 90% of 604

Section 4

5.16 × 10 = 51.6

When we multiply a number all the digits also move one place to the left if we are multiplying by 10 and two places to the left if we are multiplying by 100.

For example:-

H	T	O	$\frac{1}{10}$	$\frac{1}{100}$
		8 •	2	4
Multiply by 10				
	8	2 •		4

i.e. 8.24 × 10 = 82.4

H	T	O	$\frac{1}{10}$	$\frac{1}{100}$
		3 •	6	8
Multiply by 100				
3	6	8 •		

i.e. 3.68 × 100 = 368

When we divide a decimal number all the digits also move one place to the right if we are dividing by 10 and two places to the right if we are dividing by 100.

For example:-

H	T	O	$\frac{1}{10}$	$\frac{1}{100}$
2	8	6 •		
Divide by 10				
	2	8 •	6	

i.e. 286 ÷ 10 = 28.6

H	T	O	$\frac{1}{10}$	$\frac{1}{100}$
	8	9 •		
Divide by 100				
		0 •	8	9

i.e. 89 ÷ 100 = 0.89

Now complete the following calculations:-

1) 5.78 × 10 =

2) 0.65 × 10 =

3) 366 ÷ 10 =

4) 25.7 ÷ 10 =

5) 56.9 × 10 =

6) 0.08 × 10 =

7) 0.9 ÷ 10 =

8) 0.009 ÷ 10 =

9) 1.13 × 100 =

10) 22.5 × 100 =

11) 0.08 × 100 =

12) 0.86 × 100 =

13) 359 ÷ 100 =

14) 45 ÷ 100 =

15) 56.56 ÷ 100 =

16) 0.08 ÷ 100 =

17) Look at these calculations: -

7.8 × 100 = 7.800 7.8 ÷ 10 = 10.78

Which statement is true?

A Both answers are correct.
B The first answer is wrong and the second answer is correct.
C The first answer is correct and the second answer is wrong.
D Both answers are wrong.

18) Look at these calculations: -

$$7.08 \times 10 = 70.8 \quad 7.08 \div 10 = 0.780$$

Which statement is true?

A Both answers are correct.
B The first answer is wrong and the second answer is correct.
C The first answer is correct and the second answer is wrong.
D Both answers are wrong.

19) Look at these calculations: -

$$7.8 \times 1000 = 7\,800 \quad 7.8 \div 1000 = 0.78000$$

Which statement is true?

A Both answers are correct.
B The first answer is wrong and the second answer is correct.
C The first answer is correct and the second answer is wrong.
D Both answers are wrong.

Complete the calculations below by writing x 10, x 100, x 1000 , ÷ 10, ÷100, or ÷ 1 000 in the space.

20) 6.4_____= 0.064

21) 0.891_____= 89.1

22) 6.93_____= 0.693

23) 0.045 _____= 45

Section 5

9% = 0.09

Percentages can be converted to decimals by dividing by 100 e.g. 57% = 57 ÷ 100 = 0.57 or 57% = $\frac{57}{100}$ = 0.57.

Look at these examples:-

4% = 0.04

40% = 0.40 (or 0.4)

45% = 0.45

Write as decimals:-

1) 3%	**2)** 67%	**3)** 30%	**4)** 7%
5) 45%	**6)** 70%	**7)** 15%	**8)** 2%
9) 22%	**10)** 20%	**11)** 8%	**12)** 81%

Section 6

To convert a fraction to a percentage it is necessary to find out how to turn the denominator (bottom number) into one hundred by multiplying or dividing and then do the same to the numerator (top number).

$$\frac{16}{20} = \frac{80}{100} = 80\%$$

Here it was necessary to multiply 20 by 5 to make it into 100 so the numerator (top number) also had to be multiplied by 5.

$$\frac{243}{300} = \frac{81}{100} = 81\%$$

Here it was necessary to divide 300 by 3 to make it into 100 so the numerator (top number) also had to be

divided by 3.

Note that this will not work well for some examples!

e.g. $\frac{17}{19}$ will not work well because there is no whole number which we can multiply 19 by to turn it into 100

Another way of doing this is to find a fraction of 100% e.g. $\frac{16}{20}$ of 100% = 100 ÷ 20 × 16 = 80%

Now change these fractions into percentages:-

1) $\frac{26}{50}$ = **2)** $\frac{7}{10}$ = **3)** $\frac{22}{25}$ = **4)** $\frac{13}{20}$ =

5) $\frac{3}{10}$ = **6)** $\frac{18}{50}$ = **7)** $\frac{14}{25}$ = **8)** $\frac{19}{20}$ =

9) $\frac{186}{200}$ = **10)** $\frac{256}{400}$ = **11)** $\frac{156}{300}$ = **12)** $\frac{175}{500}$ =

Section 7

Which of these fractions is equivalent to $\frac{3}{5}$?

1) $\frac{6}{10}$ 2) $\frac{9}{15}$ 3) $\frac{12}{20}$

A: 1) only

B: 1) and 2)

C: All of them

D: None of them

To make equivalent fractions, multiply or divide the numerator (top number) and denominator (bottom number) by the same number.

For example:-

$\frac{3}{5} = \frac{6}{10}$ because both the top and bottom of the first fraction have both been multiplied by 2 to make the second fraction

$\frac{3}{5} = \frac{9}{15}$ because both the top and bottom of the first fraction have both been multiplied by 3 to make the second fraction

$\frac{3}{5} = \frac{12}{20}$ because both the top and bottom of the first fraction have both been multiplied by 4 to make the second fraction

$\frac{30}{35} = \frac{6}{7}$ because both the top and bottom of the first fraction have both been divided by 5 to make the second fraction

$\frac{3}{5}$ is **<u>not</u>** equal to $\frac{12}{15}$ because both the top has been multiplied by 4 but the bottom has been multiplied by 3

Write down three fractions which are equivalent to:-

1) $\frac{3}{4}$ **2)** $\frac{2}{3}$ **3)** $\frac{4}{5}$ **4)** $\frac{1}{5}$ **5)** $\frac{5}{6}$

Copy and complete:-

6) $\frac{1}{3} = \frac{5}{\quad}$ **7)** $\frac{3}{5} = \frac{\quad}{10}$ **8)** $\frac{1}{4} = \frac{7}{\quad}$ **9)** $\frac{5}{6} = \frac{\quad}{18}$ **10)** $\frac{3}{4} = \frac{30}{\quad}$

11) $\frac{30}{45} = \frac{6}{\quad}$ **12)** $\frac{25}{35} = \frac{\quad}{7}$ **13)** $\frac{30}{42} = \frac{\quad}{21}$ **14)** $\frac{16}{20} = \frac{4}{\quad}$ **15)** $\frac{18}{27} = \frac{\quad}{3}$

Section 8

Which fraction is larger, $\frac{2}{3}$ or $\frac{5}{7}$?

In order to compare fractions it is best to convert them to equivalent fractions with the same denominators (bottom numbers). In the question above we can aim for a common denominator of 21 (3 × 7).

We need to multiply the first fraction (top and bottom) by 7 and the second fraction (top and bottom) by 3.

$$\frac{2}{3} = \frac{14}{21} \text{ and } \frac{5}{7} = \frac{15}{21}$$

This makes it clear that $\frac{5}{7}$ is larger than $\frac{2}{3}$.

Sometimes it is possible to find a common denominator which is less that the product of the two denominators. For example, for $\frac{2}{3}$ and $\frac{7}{9}$ we can use 9 instead of 27 because 3 goes into 9.

Convert the following pairs of fractions to equivalent fractions with a common denominator and then state which is larger.

1) $\frac{1}{3}$ and $\frac{2}{7}$ **2)** $\frac{3}{5}$ and $\frac{2}{3}$ **3)** $\frac{3}{4}$ and $\frac{5}{7}$ **4)** $\frac{5}{6}$ and $\frac{4}{5}$ **5)** $\frac{3}{4}$ and $\frac{2}{3}$

6) $\frac{3}{7}$ and $\frac{4}{9}$ **7)** $\frac{1}{5}$ and $\frac{2}{9}$ **8)** $\frac{4}{5}$ and $\frac{7}{9}$ **9)** $\frac{1}{5}$ and $\frac{2}{7}$ **10)** $\frac{5}{8}$ and $\frac{2}{3}$

Section 9

We are often asked to round a number off to a certain number of decimal places.

1.4 – this number has been rounded to one decimal place (1 d.p. for short)

1.56 – this number has been rounded to two decimal places (2 d.p. for short)

1.698 – this number has been rounded to one decimal place (3 d.p. for short)

If we are asked to round 1.386792 to one decimal place (1 d.p.) we know the answer will be either 1.3 or 1.4.

The halfway point between 1.3 and 1.4 is 1.35 and this number is past that point so it is rounded up to 1.4.

Here's another way of looking at the rounding process

1.3 92 ⟶ 1.4

This digit is five or more so we round up.

If we are asked to round 2.432165 to two decimal places (2 d.p)

2.43 65 ⟶ 2.43

This digit is under 5 so we round down.

Now round these numbers:-

1) Round 1.456 to 1 d.p.

2) Round 1.465 to 1 d.p.

3) Round 1.464 to 1 d.p.

4) Round 0.076 to 1 d.p.

5) Round 5.645 to 2 d.p.

6) Round 5.654 to 2 d.p.

7) Round 6.445 to 2 d.p.

8) Round 6.504 to 2 d.p.

9) Round 1.3567 to 3 d.p.

10) Round 5.3209 to 3 d.p.