

Percentages

One Whole-100%									
50%					50%				
$33\frac{1}{3}\%$			$33\frac{1}{3}\%$			$33\frac{1}{3}\%$			
25%		25%		25%		25%			
20%		20%		20%		20%		20%	
$12\frac{1}{2}\%$	$12\frac{1}{2}\%$	$12\frac{1}{2}\%$	$12\frac{1}{2}\%$	$12\frac{1}{2}\%$	$12\frac{1}{2}\%$	$12\frac{1}{2}\%$	$12\frac{1}{2}\%$	$12\frac{1}{2}\%$	
10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

Key Vocabulary

Percentage	→	A number as a fraction of 100
13%	→	is equivalent to $\frac{13}{100}$

Whole School Approach

Express students' test scores as a fraction and then as a percentage

1. Make a fraction by placing the test score received over the total number of marks.
2. Estimate the percentage mark from the fraction.
3. Change the fraction to a percentage by multiplying the fraction by $\frac{100}{1}$.
4. Check your answer using a calculator.

Example 1. Marie got a score of 47 in her biology test out of a total score of 60. What percentage mark did Marie achieve in her exam?

1. Fraction

Put the mark Marie achieved over the total number of marks for the exam. E.g. Fraction = $\frac{47}{60}$

At this point, ask could another fraction equivalent to $\frac{47}{60}$ be formed?

Estimate

Calculate

Check

2. Estimate

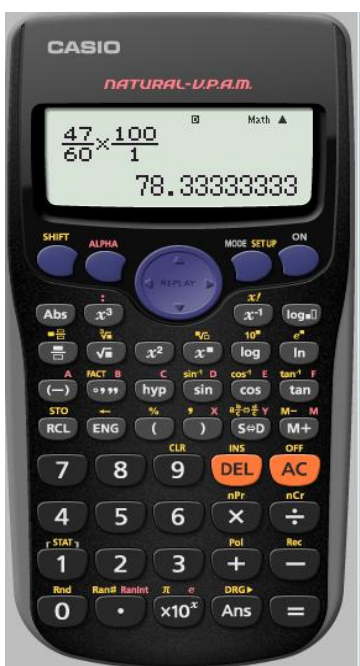
$\frac{30}{60}$ is equivalent to a $\frac{1}{2}$, which is equivalent to 50%. Therefore the answer will be greater than 50% because $\frac{47}{60}$ is greater than a $\frac{1}{2}$.

3. Calculate

$$\frac{47}{60} \times \frac{100}{1} = \frac{47}{\cancel{(20)}(3)} \times \frac{\cancel{(20)}(5)}{1} = \frac{47}{3} \times \frac{5}{1} = \frac{235}{3} = 78\frac{1}{3}\%$$

Since 20 is the highest common factor of both 60 and 100, we can simplify these two numbers before multiplying.

4. Check



To check the answer on the calculator, key in the following:

47



60



×

100



1

=

$\frac{235}{3}$



78.3 $\dot{3}$

Is $78\frac{1}{3} = 78.3\dot{3}$? Explain your answer.

Explain how you could round Marie's percentage mark to the nearest whole number.

To calculate the percentage of a number

'of' means multiply

Problem 2: Sean earns €15 per week for walking his neighbour's dog. His neighbour increased his wage by 20%. How much per week did Sean's wage increase by?

Estimate

Calculate

Check

1. Estimate

20% is less than a $\frac{1}{2}$. Therefore, the answer will be less than $\frac{1}{2}$ of €15. i.e. $(\frac{1}{2} \times \frac{15}{1}) = €7.50$

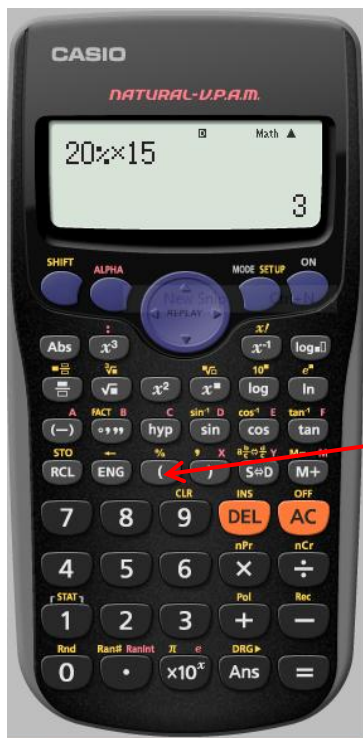
2. Calculate

$20\% = \frac{20}{100}$ which is equivalent to $\frac{1}{5}$.

$\frac{1}{5}$ of €15 means: $\frac{1}{5} \times \frac{15}{1} = \frac{1}{\cancel{5}(1)} \times \frac{\cancel{5}(3)}{1} = \frac{1}{1} \times \frac{3}{1} = \frac{3}{1} = €3$

Since 5 is the highest common factor of both 5 and 15, we can simplify these two numbers before multiplying

3. Check



To check the answer on the calculator, key in the following:

20



(

×

15

=

How did the estimate compare to your final answer? Explain your findings.