DECIMAL FRACTIONS

NOTES & ACTIVITIES

GRADE 8

Name and surname : _____

What is a decimal fraction?

- A decimal fraction is a way of writing fractions using base 10 as the denominator.
- In the final form the base 10 denominator does not appear.
- To write a common fraction as a decimal fraction, we must first express the common fraction with a power of ten (10, 100, 1 000, etc.) as the denominator.

Example 1

Convert the following common fractions to decimal fractions:

1.1 $\frac{3}{10}$

1.2 $\frac{3}{100}$

1.3 $\frac{3}{1000}$

$\frac{}{10}$	1 number after decimal comma
$\frac{}{100}$	2 numbers after decimal comma
$\frac{}{1000}$	3 numbers after decimal comma

Example 2

2.1 $\frac{2}{5}$

2.2 $\frac{3}{4}$

2.3 $\frac{1}{8}$

2.4 $\frac{7}{5}$

Example 3

Complete the following table:

	Common Fraction	Percentage	Decimal fraction
3.1	$\frac{1}{2}$		
3.2		35%	
3.3			0,05
3.4		0,8%	
3.5	$\frac{16}{64}$		

Exercise 1



1. Rewrite the number 132,7462 and round it off correctly to the number of decimal places indicated.

1.1 3 decimal places

1.2 2 decimal places

1.3 1 decimal place

1.4 the nearest whole number

2. Write the following common fractions as decimal fractions:

2.1 $\frac{13}{25}$

2.2 $\frac{18}{45}$

2.3 $\frac{7}{125}$

3. Write the following decimal fractions as common fractions in their simplest form:

3.1 0,025

3.2 0,0275

3.3 0,375

3.4 12,04

4. Copy and fill in $<, > or =$

4.1 3,09 ☐ 3,9

4.2 3,9 ☐ 3,90

4.3 2,31 ☐ 3,3

4.4 3,197 ☐ 3,2

4.5 123,3 ☐ 23,321

Addition and Subtraction

Example 4

Calculate:

4.1 $0{,}58 + 0{,}72 + 1{,}003$

4.2 $3{,}49 - 1{,}723$

Exercise 2



1. Calculate:

1.1 $1{,}7 + 2{,}09 + 13{,}502$

1.2 $97{,}46 - 36{,}285$

1.3 $18{,}26 + 7{,}1 - 12{,}2$

2. Determine the sum of 2,975 and 15,2.

3. Subtract 36,283 from 42,76.

Multiplication and Division

- When multiplying decimals, the answer must have the total number of decimal places from the question.

Example 5

Calculate:

5.1 $0{,}005 \times 0{,}6$

5.2 $0{,}04 \times 0{,}3$

- When dividing decimals, make the divisor a whole number by multiplying it by a factor of 10 e.g. 10 / 100/ 1000 etc.

Example 6

Calculate:

6.1 $3{,}24 \div 0{,}4$

6.2 $2{,}322 \div 0{,}03$



Exercise 3

Evaluate:

1. $0{,}1 \times 0{,}2$
2. $1{,}5 \times 0{,}03$
3. $27{,}9 \div 0{,}3$
4. $0{,}0144 \div 0{,}12$
5. $2{,}5 \times 15{,}4 \div 0{,}5$

Squares, Square roots, Cubes and Cube roots

- Convert the decimal fraction to a common fraction first

Example 7

Calculate:

7.1 $(0{,}05)^2$

7.2 $(0{,}5)^3$

7.3 $\sqrt{0{,}09}$

7.4 $\sqrt[3]{0{,}008}$

Example 8

Calculate:

8.1 $(0{,}3)^3$

8.2 $(0{,}5)^2 - \sqrt[3]{0{,}001}$

Example 9

Calculate:

9.1 $0{,}2^2 \times 25$

Exercise 4

Calculate the following without the use of a calculator:

1. $2 \times 0{,}25 - \sqrt{0{,}16}$
2. $\sqrt{0{,}0004} - 0{,}2 \times 0{,}1$
3. $0{,}6^2 \times 0{,}3^2$
4. $\sqrt[3]{0{,}027} \div \sqrt{0{,}04}$
5. $\sqrt{(0{,}3)^2 + 10 \times (0{,}3)^3}$

Exercise 5

1. Write down the symbol ($<$, $>$ or $=$) that would make each statement true:

1.1 $0{,}5 \square \frac{1}{2}$

1.2 $0{,}6 \square \frac{6}{100}$

1.3 $0{,}025 \square \frac{1}{4}$

2. Calculate the following without the use of a calculator:

2.1 $\sqrt{\frac{\sqrt[3]{-64}+5}{4^2+3^2}}$

2.2 $\sqrt[3]{0{,}125} + \left(\frac{1}{2}\right)^2$

3. By how much is $0{,}7$ greater than $0{,}07$?

4. The difference between two numbers is $0{,}75$. The bigger number is $18{,}4$. What is the other number?

5. Divide $R44{,}45$ between seven people so that each one receives the same amount.

6. Jackson has a tape roll of bubblegum that is $3{,}6m$ long. If he eats $0{,}15m$ of bubblegum everyday, how long will the bubblegum last?

7. 1ℓ of water weighs $0{,}995\ kg$.

7.1 What will 50ℓ of water weigh?

7.2 What will $0{,}5\ell$ of water weigh?

8. The fractions $\frac{16}{28}$ and $\frac{\square}{35}$ are equivalent. What must the value of $\square$ be?

9. Make two fraction that will provide the biggest product using the numbers 4, 5, 7 and 9.

10. Your school needs to hire busses for all the Gr. 8's to go on an excursion. If there is 230 Gr. 8's going on the excursion and a bus can transport 48 learners. How many busses must the school hire?

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1. Ann and Jenny divide 560 zeds between them. If Jenny gets $\frac{3}{8}$ of the money, how many zeds will Ann get?

2. Which of these is the BEST estimate of $\frac{7.21\times3.86}{10.09}$?

   a) $\frac{7\times3}{10}$ b) $\frac{7\times4}{10}$ c) $\frac{7\times3}{11}$ d) $\frac{7\times4}{11}$

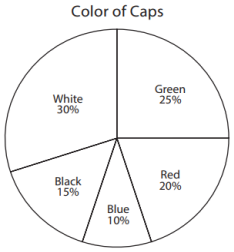
3. The pie chart shows the percentages of caps for sale at a sporting goods store. If there are 200 caps, what is the total number of caps that are either white or green?

   a) 55

   b) 100

   c) 110

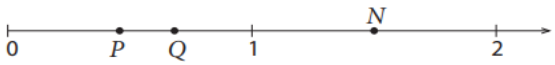
   d) 145

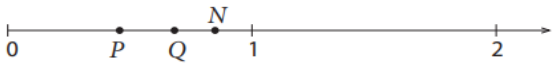


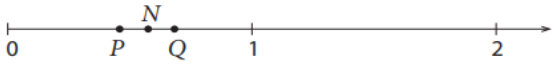
4. P and Q represent two fractions on the number line below.

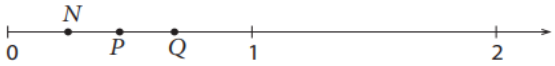
   $P \times Q = N$

   Which of these shows the location of N on the number line?

   a)
   

   b)
   

   c)
   

   d)
   

5. Which of these number sentences is true?

   a) $\frac{3}{10}$ of $50 = 50\%$ of 3

   b) 3% of $50 = 6\%$ of 100

   c) $50 \div 30 = 30 \div 50$

   d) $\frac{3}{10} \times 50 = \frac{5}{10} \times 30$

6. Which shows the correct method for finding $\frac{1}{3} - \frac{1}{4}$?

a) $\frac{1-1}{4-3}$ b) $\frac{1}{4-3}$ c) $\frac{3-4}{3\times4}$ d) $\frac{4-3}{3\times4}$

7. A workman cut off $\frac{1}{5}$ of a pipe. The piece he cut off was 3 meters long. How many meters long was the original pipe?

a) $8m$ b) $12m$ c) $15m$ d) $18m$

8. The fractions $\frac{4}{14}$ and $\frac{\square}{21}$ are equivalent. What is the value of $\square$?

a) 6 b) 7 c) 11 d) 14
