Theme: Numbers and Numeration (M-08-001) **CODE A1**

Lesson Title: Converting between Mixed and Improper fractions

1. What is a **mixed fraction**?

2. What is an **improper fraction**?

2 minutes

Theme: Numbers and Numeration (M-08-001) **CODE A1**

Lesson Title: Converting between Mixed and Improper fractions

Answer:

1. A **mixed fraction** is a whole number and a fractional part. The numerator is less than the denominator.
   For example, $1\frac{2}{5}$ is a mixed fraction.

2. An **improper fraction** is a fraction in which the numerator is bigger than the denominator.
   For example, $\frac{7}{3}$ is an improper fraction.

Theme: Numbers and Numeration (M-08-001) **CODE A2**

Lesson Title: Converting between Mixed and Improper fractions

Convert the following improper fractions to mixed fractions:

1. $\frac{7}{6}$
2. $\frac{21}{5}$
3. $\frac{16}{5}$

3 minutes

Theme: Numbers and Numeration (M-08-001) **CODE A2**

Lesson Title: Converting between mixed and Improper fractions

Answer:

1. $\frac{(6+1)}{6} = \frac{6}{6} + \frac{1}{6} = 1\frac{1}{6}$
2. $\frac{(20+1)}{5} = \frac{20}{5} + \frac{1}{5} = 4\frac{1}{5}$
3. $\frac{(15+1)}{3} = \frac{15}{3} + \frac{1}{3} = 5\frac{1}{3}$

Theme: Numbers and Numeration (M-08-001) **CODE A3**

Lesson Title: Converting between mixed and Improper fractions

Convert the following mixed fractions to improper fractions:

1. $2\frac{1}{8}$
2. $3\frac{1}{5}$
3. $8\frac{3}{5}$

4 minutes

Theme: Numbers and Numeration (M-08-001) **CODE A3**

Lesson Title: Converting between mixed and Improper fractions

Answer:

Hint: use BODMAS

1. $\frac{(2 \times 8 + 1)}{8} = \frac{17}{8}$
2. $\frac{(3 \times 5 + 1)}{5} = \frac{16}{5}$
3. $\frac{(8 \times 5 + 3)}{5} = \frac{43}{5}$

Theme: Numbers and Numeration (M-08-002) **CODE A4**

Lesson Title: Converting Decimals to Fractions

Convert the following decimals to fractions:

1. 0.6
2. 0.025
3. 1.35

3 minutes

Theme: Numbers and Numeration (M-07-002) **CODE A4**

Lesson Title: Converting Decimals to Fractions

Answer:

1. $0.6 = \frac{6}{10} = \frac{3}{5}$
2. $0.025 = \frac{25}{1000} = \frac{1}{40}$
3. $1\frac{35}{100} = 1\frac{7}{20}$

Theme: Numbers and Numeration (M-08-003) **CODE A5**

Lesson Title: Converting Fractions to Decimals

Convert the following fractions to decimal numbers:

1. $8\frac{17}{100}$
2. $\frac{7}{20}$

3 minutes

Theme: Numbers and Numeration (M-08-003) **CODE A5**

Lesson Title: Converting Fractions to Decimals

Answer:

1. $8\frac{17}{100} = \frac{817}{100} = 8.17$
2. $\frac{7}{20} = \frac{35}{100} = 0.35$

Theme: Numbers and Numeration (M-08-004) **CODE A6**

Lesson Title: Comparing and Ordering a Mixture of Numbers

What is a n**umber line?**

1 minute

Theme: Numbers and Numeration (M-08-004) **CODE A6**

Lesson Title: Comparing and Ordering a Mixture of Numbers

Answer:

A number line is a straight line marked off in equal intervals to represent the relationship and the order of numbers.

Theme: Numbers and Numeration (M-08-004) **CODE A7**

Lesson Title: Comparing and Ordering a Mixture of Numbers

Draw a number line that shows the fractions in thirds from **0 to 1**.

2 minutes

Theme: Numbers and Numeration (M-08-004) **CODE A7**

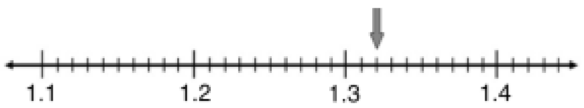
Lesson Title: Comparing and Ordering a Mixture of Numbers

Answer:

Theme: Numbers and Numeration (M-08-004) **CODE A8**

Lesson Title: Comparing and Ordering a Mixture of Numbers

Identify the number shown by the arrow on the number line.



1 minute

Theme: Numbers and Numeration (M-08-004) **CODE A8**

Lesson Title: Comparing and Ordering a Mixture of Numbers

Answer:

The number indicated by the **arrow** is 1.32

Theme: Numbers and Numeration (M-08-004) **CODE A9**

Lesson Title: Comparing and Ordering a Mixture of Numbers

Create a number line that represents these numbers in their correct order:

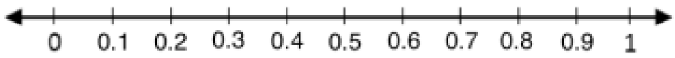
0.1, 0.2, 0.4, 0.8, 0.9, 0.3, 0.5, 0.6, 0.7, 0, 1

2½ minutes

Theme: Numbers and Numeration (M-08-004) **CODE A9**

Lesson Title: Comparing and Ordering a Mixture of Numbers

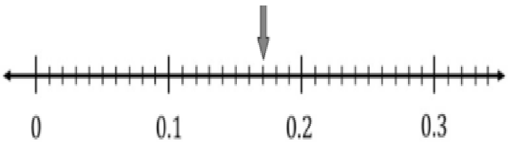
Answer:



Theme: Numbers and Numeration (M-08-005) **CODE A10**

Lesson Title: Locating a Mixture of Numbers on the Number Line

Identify the number shown by the arrow:



2 minutes

Theme: Numbers and Numeration (M-08-005) **CODE A10**

Lesson Title: Locating a Mixture of Numbers on the Number Line

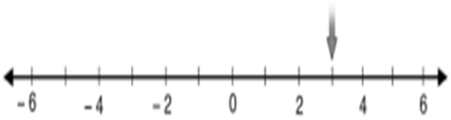
Answer:

Step 1. The number is between 0.1 and 0.2.
Step 2. The scale is marked in hundredths.
The labelled numbers are tenths: 0.1, 0.2, 0.3.
Each tenth is divided into 10 equal parts, which are hundredths.
Step 3. The value of the number is **<u>0.17</u>.**
We say zero point one seven (not seventeen)

Theme: Numbers and Numeration (M-08-005) **CODE A11**

Lesson Title: Locating a Mixture of Numbers on the Number Line

Identify the number shown with the arrow:



1½ minutes

Theme: Numbers and Numeration (M-08-005) **CODE A11**

Lesson Title: Locating a Mixture of Numbers on the Number Line

Answer:

Step 1. The number is between 2 and 4.
Step 2. The scale is marked in ones, but only the even integers are labelled.
Step 3. The value of the number is **<u>3</u>.**

Theme: Numbers and Numeration (M-08-006) **CODE A12**

Lesson Title: Classification of Decimal Numbers

1. What is a **recurring** decimal?
2. What is a **terminating** decimal?

2 minutes

Theme: Numbers and Numeration (M-08-006) **CODE A12**

Lesson Title: Classification of Decimal Numbers

Answer:

1. A **recurring decimal** is a decimal that does not have an end.

   Example 0.2222... (We say zero point two two two …)

2. A **terminating decimal** is a decimal that has an end. Example 0.25

Theme: Numbers and Numeration (M-08-006) **CODE A13**

Lesson Title: Classification of Decimal Numbers

Determine whether the following decimal numbers are recurring or terminating:

1. 3.8261
2. 2.999…
3. $9.\dot{9}$

2 minutes

Theme: Numbers and Numeration (M-08-006) **CODE A13**

Lesson Title: Classification of Decimal Numbers

Answer:

1. Terminating.
2. Recurring.
3. Recurring.

Theme: Numbers and Numeration (M-08-006) **CODE A14**

Lesson Title: Classification of Decimal Numbers

Write the following decimal numbers in their **shortened notation**:

1. 1.5454545454…
2. 0.666666…
3. 0.123123123123…

1½ minutes

Theme: Numbers and Numeration (M-08-006) **CODE A14**

Lesson Title: Classification of Decimal Numbers

Answer:

1. $1.\overline{54}$
2. $0.\overline{66}$
3. $0.\overline{123}$

Theme: Numbers and Numeration (M-08-007) **CODE A15**

Lesson Title: Rounding off Decimal Numbers to the Nearest Whole

Round off the following decimals to the nearest whole number.

1. 13.29
2. 20.8

3 minutes

Theme: Numbers and Numeration (M-08-007) **CODE A15**

Lesson Title: Rounding off Decimal Numbers to the Nearest Whole

Answer:

1. We only consider the digit 2 after the decimal point. This is less than 5, so we round down.
   Answer: 13
2. We only consider the digit 8 after the decimal point. This is greater than 5, so we round up.
   Answer: 21

Theme: Numbers and Numeration (M-08-008) **CODE A16**

Lesson Title: Rounding off Decimal Numbers to Stated Decimal

Round off 11.2389 to:

1. 1 decimal place
2. 2 decimal places
3. 3 decimal places

4 minutes

Theme: Numbers and Numeration (M-08-008) **CODE A16**

Lesson Title: Rounding off Decimal Numbers to Stated Decimal

Answer:

1. The digit in the 2nd decimal place is 3, so we round down to **11.2**
2. The digit in the 3rd decimal place is 8, so we round up to **11.24**
3. The digit in the 4th decimal place is 9, so we round up to **11.239**

Theme: Numbers and Numeration (M-08-011) **CODE A17**	Theme: Numbers and Numeration (M-08-011) **CODE A17**
Lesson Title: Adding and Subtracting Integers and Decimals	Lesson Title: Adding and Subtracting Integers and Decimals
Add or subtract the numbers: 1. 215.98 + 125.2 2. 1.5 – 0.9 3. 2.25 – 1.81 2 minutes	Answer: 1. 215.98 + 125.2 **Answer:** 341.18 2. 1.5 − 0.9 **Answer:** 0.6 3. 2.25 − 1.81 **Answer:** 0.44
Theme: Numbers and Numeration (M-08-012) **CODE A18**	Theme: Numbers and Numeration (M-08-012) **CODE A18**
Lesson Title: Adding and Subtracting Fractions with Integers and Decimals	Lesson Title: Adding and Subtracting Fractions with Integers and Decimals
Evaluate the following: 4.5 × 4 ÷ 0.25 **Hint:** Convert the decimal numbers into fraction form 2 minutes	Answer: $4\frac{5}{10} \times 4 \div \frac{25}{100}$ simplify fractions $= 4\frac{1}{2} \times 4 \div \frac{1}{4}$ change to improper fractions $= \frac{9}{2} \times 4 \div \frac{1}{4}$ BODMAS = 72
Theme: Numbers and Numeration (M-08-015) **CODE A19**	Theme: Numbers and Numeration (M-08-015) **CODE A19**
Lesson Title: Story Problems with Operations on Different Number	Lesson Title: Story Problems with Operations on Different Number
Solve the following story problem: David had ¾ cup of rice, and his sister gave him ¾ cup more. How much rice did he have in total? 1½ minutes	Answer: Words like more and total tell us to add. Identify the 2 numbers to be added: $\frac{3}{4}$ and $\frac{3}{4}$ $\frac{3}{4} + \frac{3}{4}$ **Hint:** Add numerators $= \frac{(3+3)}{4}$ $= \frac{6}{4} = \frac{3}{2}$ David had $\frac{3}{2}$ cups or **1**½ cups of rice in total.
Theme: Numbers and Numeration (M-08-016) **CODE A20**	Theme: Numbers and Numeration (M-08-016) **CODE A20**
Lesson Title: Review the Concept and Vocabulary of Factors and	Lesson Title: Review the Concept and Vocabulary of Factors and
What is a **factor** of a number? 1½ minutes	Answer: A **factor** is a number that can divide exactly into another number with no remainder. **For example**, 6 divides into 12 two times, therefore 6 is a factor of 12. Factors of 12 include 1, 2, 3, 6 and 12.

<table>
<tr><td>Theme: Numbers and Numeration (M-08-016) CODE A21</td><td>Theme: Numbers and Numeration (M-08-016) CODE A21</td></tr>
<tr><td>Lesson Title: Review the Concept and Vocabulary of Factors and</td><td>Lesson Title: Review the Concept and Vocabulary of Factors and</td></tr>
<tr><td>List the factors of 16.

3 minutes</td><td>Answer:
The factors of 16 are all the numbers that divide it evenly.
These are 1, 2, 4, 8 and 16.
Check by dividing 16 by each factor:
16 ÷ 1 = 16
16 ÷ 2 = 8
16 ÷ 4 = 4
16 ÷ 8 = 2
16 ÷ 16 = 1</td></tr>
<tr><td>Theme: Numbers and Numeration (M-08-017) CODE A22</td><td>Theme: Numbers and Numeration (M-08-017) CODE A22</td></tr>
<tr><td>Lesson Title: Review Prime and Composite Numbers</td><td>Lesson Title: Review Prime and Composite Numbers</td></tr>
<tr><td>What is a prime number?

1 minute</td><td>Answer:

A prime number is a number that is greater than 1 and cannot be divided evenly by any other number except 1 and itself.

Examples of prime numbers between 1 and 10 are
2, 3, 5, 7.</td></tr>
<tr><td>Theme: Numbers and Numeration (M-08-017) CODE A23</td><td>Theme: Numbers and Numeration (M-08-017) CODE A23</td></tr>
<tr><td>Lesson Title: Review Prime and Composite Numbers</td><td>Lesson Title: Review Prime and Composite Numbers</td></tr>
<tr><td>What is a composite number?

1 minute</td><td>Answer:
A composite number is any whole number other than 1 that is not a prime number, meaning it has factors other than 1 and the number itself.

Examples of composite numbers between 0 and 10 are

4, 6, 8, 9, 10</td></tr>
<tr><td>Theme: Numbers and Numeration (M-08-018) CODE A24</td><td>Theme: Numbers and Numeration (M-08-018) CODE A24</td></tr>
<tr><td>Lesson Title: Review Prime and Composite Numbers</td><td>Lesson Title: Review Prime and Composite Numbers</td></tr>
<tr><td>Identify prime and composite numbers between 5 and 15.

3 minutes</td><td>Answer:

Numbers between 5 and 15 are 6, 7, 8, 9, 10, 11, 12, 13, 14

Prime numbers: 7, 11, 13
Composite numbers: 6, 8, 9, 10, 12, 14</td></tr>
</table>

Theme: Numbers and Numeration (M-08-018) **CODE A25**

Lesson Title: Prime Factors of Whole Numbers

What are **prime factors?**

1½ minutes

Theme: Numbers and Numeration (M-0-018) **CODE A25**

Lesson Title: Prime Factors of Whole Numbers

Answer:

Prime factors are factors of a number that are also prime numbers.
For example, 3 and 5 are factors of 15 and they are also prime numbers.

Theme: Numbers and Numeration (M-087-018) **CODE A26**

Lesson Title: Prime Factors of Whole Numbers

Identify the prime factors of 20.

3 minutes

Theme: Numbers and Numeration (M-08-018) **CODE A26**

Lesson Title: Prime Factors of Whole Numbers

Answer:

First, list all the factors of 20: 1, 2, 4, 5, 10, 20

Identify whether each factor is **also** a prime number.
In this list, only 2 and 5 are prime numbers.

Answer: The prime factors of 20 are 2 and 5.

Theme: Numbers and Numeration (M-08-019) **CODE A27**

Lesson Title: Calculating the Least Common Multiple (LCM)

Find the lowest common multiple (LCM) of 12 and 20.

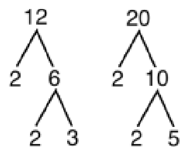
4 minutes

Theme: Numbers and Numeration (M-08-019) **CODE A27**

Lesson Title: Calculating the Least Common Multiple (LCM)

Answer:

Step 1 Factor trees:



Step 2 Prime factors for 12 are 2, 2 and 3

Prime factors for 20 are 2, 2 and 5.

The prime factor 2 occurs twice in 12 and twice in 20.

The prime factors 3 and 5 only occur once.

Prime factors to find LCM of 12 and 20: **2, 2, 3** and **5**

Step 3 $2 \times 2 \times 3 \times 5 = 60$

Answer: The LCM of 12 and 20 is **60**.

Theme: Numbers and Numeration (M-08-021) **CODE A28**

Lesson Title: Index Notation

Identify the **base** and the **index** in this number:

3^2

1 minute

Theme: Numbers and Numeration (M-08-0201 **CODE A28**

Lesson Title: Index Notation

Answer:

3 is the base of the number.
2 is the index or power of the number.

Theme: Numbers and Numeration (M-08-021) CODE A29	Theme: Numbers and Numeration (M-08-021) CODE A29
Lesson Title: Index Notation	Lesson Title: Index Notation
Evaluate the following: 1. 6^3 2. 8^1 1 minute	Answer: 1. 6^3 Multiply 6 by itself 3 times $= 6 \times 6 \times 6$ $= 36 \times 6$ **Answer:** 216 2. 8^1 Multiply 8 by itself once $= 8$ **Answer:** 8

Theme: Numbers and Numeration (M-08-022) CODE A30	Theme: Numbers and Numeration (M-08-022) CODE A30
Lesson Title: Index Law 1: Multiplication of Indices	Lesson Title: Index Law 1: Multiplication of Indices
Simplify the following. Give the answer in index notation. $2^8 \times 2^5$ 2 minutes	Answer: $2^8 \times 2^5$ $= 2^{8+5}$ $= 2^{13}$ **Remember:** If the bases are the same, add the exponents. $a^m \times a^n = a^{m+n}$

Theme: Numbers and Numeration (M-08-023) CODE A31	Theme: Numbers and Numeration (M-08-023) CODE A31
Lesson Title: Index Law 2: Division of Indices	Lesson Title: Division of Indices
Simplify the following: $3^5 \div 3^3$ 2 minutes	Answer: $3^5 \div 3^3$ $= 3^{5-3}$ $= 3^2$ **Answer:** 9 **Remember:** In division if the bases are the same, subtract the exponents. $a^m \div a^n = a^{m-n}$

Theme: Numbers and Numeration (M-08-025) CODE A32	Theme: Numbers and Numeration (M-08-025) CODE A32
Lesson Title: Index Law 4: Powers of Indices	Lesson Title: Index Law 4: Powers of Indices
Simplify and leave the answer in index notation. $(2^2)^3$ 1½ minutes	Answer: $(2^2)^3 = 2^{2\times3} = 2^6$ **Remember:** Multiply the powers together.

Theme: Numbers and Numeration (M-08-026) **CODE A33**

Lesson Title: Index Laws 5 and 6: Power of a Product and Quotient

Simply the following:

$(2 \times 3)^2$

2 minutes

Theme: Numbers and Numeration (M-08-026) **CODE A33**

Lesson Title: Index Laws 5 and 6: Power of a Product and Quotient

Answer:

$(2 \times 3)^2$
$= 2^2 \times 3^2$
$= 4 \times 9$
$= 36$

Theme: Numbers and Numeration (M-08-027) **CODE A34**

Lesson Title: Application of the Laws of Indices

Simplify the following. Leave your answer in index notation.

$(2^3)^4 \times 2^5$

4 minutes

Theme: Numbers and Numeration (M-08-027) **CODE A34**

Lesson Title: Application of the Laws of Indices

Answer:

$$(2^3)^4 \times 2^5 = 2^{3\times4} \times 2^5$$
$$= 2^{12} \times 2^5$$
$$= 2^{12+5} = 2^{17}$$

Theme: Numbers and Numeration (M-08-028) **CODE A35**

Lesson Title: Indices with Negative Powers

Simplify and leave the answer with positive indices.

1. 2^{-2}
2. 23^{-41}

3 minutes

Theme: Numbers and Numeration (M-08-028) **CODE A35**

Lesson Title: Indices with Negative Powers

Answer:

1. $2^{-2} = \frac{1}{2^2} = \frac{1}{4}$
2. 23^{-41}
   $= \frac{1}{23^{41}}$

Remember:
Rewrite the index with a positive power $(a^m = \frac{1}{a^m})$

Theme: Numbers and Numeration (M-08-030) **CODE A36**

Lesson Title: Negative Powers and the Index Laws

Simplify:

$2^4 \div 2^{-3} \times 2^2$

Hint: Use BODMAS.

4 minutes

Theme: Numbers and Numeration (M-08-030) **CODE A36**

Lesson Title: Negative Powers and the Index Laws

Answer:

$2^4 \div 2^{-3} \times 2^2$
$= 2^4 \div \frac{1}{2^3} \times 2^2$
$= 2^{4-3} \times 2^2$
$= 2^1 \times 2^2$
$= 2^{1+2} = 2^3$

Remember: In BODMAS, work with division and multiplication together, from left to right.

Theme: Numbers and Numeration (M-08-031) CODE A37	Theme: Numbers and Numeration (M-08-031) CODE A37
Lesson Title: Identifying the Percentage of a Given Quantity	Lesson Title: Identifying the Percentage of a Given Quantity
Define **percentage.** 1 minute	Answer: A percentage is a number or ratio expressed as a fraction of 100. It is often identified by using the sign “%” **Example** $30\% = \frac{30}{100}$
Theme: Numbers and Numeration (M-08-031) CODE A38	Theme: Numbers and Numeration (M-08-031) CODE A38
Lesson Title: Identifying the Percentage of a Given Quantity	Lesson Title: Identifying the Percentage of a Given Quantity
Solve the following word problem: Fatu bought a bag containing 150 oranges, but 10% were rotten. How many were rotten? **Hint:** First express the percentage as a fraction. 3 minutes	Answer: Convert the percentage to a fraction $10\% = \frac{10}{100} = \frac{1}{10}$ Find 10% of 150 $\frac{1}{10} \times 150$ $= \frac{150}{10}$ $= 15$ **Answer: 15** of the 150 oranges were rotten.
Theme: Everyday Arithmetic (M-08-032) CODE A39	Theme: Everyday Arithmetic (M-08-032) CODE A39
Lesson Title: Expressing One Quantity as a Percentage of Another	Lesson Title: Expressing One Quantity as a Percentage of Another
Solve the following word problem: During a Mathematics test lasting one hour, a student took nine minutes to answer one question. What percentage of the test time was used to answer the question? **Hint:** Convert hours into minutes 5 minutes	Answer: Convert 1 hour = 60 minutes Write the given quantity (9 minutes) as a fraction of one hour (60 minutes) $\frac{9}{60}$ Multiply by 100%: $\frac{9}{60} \times 100\% = 15\%$ **Answer:** The percentage of the test time used to answer the question was **15%**
Theme: Numbers and Numeration (M-08-033) CODE A40	Theme: Numbers and Numeration (M-08-033) CODE A40
Lesson Title: Percentage increase	Lesson Title: Percentage increase
How do we know if we are looking for a percentage increase or a percentage decrease? 2 minutes	Answer: When the new value is **greater** than the old value, we are calculating a percentage **increase**. When the new value is **less** than the old value, we are calculating a percentage **decrease**.

Theme: Numbers and Numeration (M-08-033) CODE A41	Theme: Numbers and Numeration (M-08-033) CODE A41
Lesson Title: Percentage increase	Lesson Title: Percentage increase
What is the formula for finding the percentage increase or decrease? 1 minute	Answer: $\text{Percentage change} = \frac{\text{change in quantity}}{\text{original quantity}} \times 100\%$
Theme: Numbers and Numeration (M-08-033) CODE A42	**Theme: Numbers and Numeration (M-08-033) CODE A42**
Lesson Title: Percentage increase	Lesson Title: Percentage increase
Solve the word problem: A bag of rice cost le 150,000 and was increased to Le 210,000. Calculate the percentage increase. 2 minutes	Answer: percentage increase = $\frac{210{,}000 - 150{,}000}{150{,}000} \times 100\%$ $= \frac{60{,}000}{150{,}000} \times 100\%$ = 40%
Theme: Numbers and Numeration (M-08-033) CODE A43	**Theme: Numbers and Numeration (M-08-033) CODE A43**
Lesson Title: Percentage increase	Lesson Title: Percentage increase
Solve the word problem: A man sells cassava in the market. One week he sold 200 bags and the next week he sold 240 bags. Calculate the percentage increase. 2 minutes	Answer: percentage increase = $\frac{240 - 200}{200} \times 100\%$ $= \frac{4}{20} \times 100\%$ = 20%
Theme: Numbers and Numeration (M-08-035) CODE A44	**Theme: Numbers and Numeration (M-08-035) CODE A44**
Lesson Title: Applying Percentage Increase and decrease	Lesson Title: Applying Percentage Increase and decrease
You are given a quantity K and given the percentage increase or decrease M on it. Explain what steps you need to calculate the new quantity.	Answer: 1. State the increase or decrease in percentage. $\mathrm{M}\%$ 2. For percent increase, **add** the percentage to 100%. For percent decrease, **subtract** the percentage from 100%. $100\% \pm \mathrm{M}$ 3. Because it is percent, divide the answer by 100. $\frac{100 \pm M}{100}$ 4. Multiply the answer by the given number K to give the new number. $\left(\frac{100 \pm \mathrm{M}}{100}\right) \times \mathrm{K}$

Theme: Numbers and Numeration (M-08-035) **CODE A45**

Lesson Title: Applying Percentage Increase and decrease

Solve the following word problems:

1. A messenger received a salary of Le 68,500. She is promoted to a higher salary level and her salary increases by 14%. Calculate her new salary.

2. The number 600 is decreased by 35%. Find the new number.

4 minutes

Theme: Numbers and Numeration (M-08-035) **CODE A45**

Lesson Title: Applying Percentage Increase and decrease

Answer:

1. New salary = $\frac{100+14}{100} \times \frac{68{,}500}{1}$

$= \frac{114}{100} \times \frac{68{,}500}{1}$

$= 114 \times 685$

= Le 78,090.00

2. New number = $\frac{100-35}{100} \times \frac{600}{1}$

$= \frac{65}{100} \times \frac{600}{1}$

$= 65 \times 6$

= 390

Theme: Everyday Arithmetic (M-08-036) **CODE A46**

Lesson Title: Introduction to Profit and Loss

Differentiate between a **profit** and a **loss.**

1½ minutes

Theme: Everyday Arithmetic (M-08-036) **CODE A46**

Lesson Title: Introduction to Profit and Loss

Answer:

Profit: Money made after costs have been subtracted from sales. **Profit = sales – cost**

Loss: Money lost after costs have been subtracted from sales. **Loss = cost – sales**

Theme: Everyday Arithmetic (M-08-036) **CODE A47**

Lesson Title: Introduction to Profit and Loss

State the formulae for **percent profit** and **percent loss.**

1½ minutes

Theme: Everyday Arithmetic (M-08-036) **CODE A47**

Lesson Title: Introduction to Profit and Loss

Answer:

Percent profit = $\frac{\text{profit}}{\text{capital}} \times 100\%$

Percent loss = $\frac{\text{loss}}{\text{capital}} \times 100\%$

Theme: Everyday Arithmetic (M-08-037) **CODE A48**

Lesson Title: Calculating Profit

Solve the following word problem:

A watermelon was bought for Le 1.00 and sold at Le 1.70.

Calculate the **percent profit.**

3 minutes

Theme: Everyday Arithmetic (M-08-037) **CODE A48**

Lesson Title: Calculating Profit

Answer:

Profit = sales – cost Sales: Le 1.70 Costs: Le 1.00

Profit**:** Sales – cost = 1.70 – 1.00 = Le 0.70

Calculate the percentage profit:

Percent profit = $\frac{\text{profit}}{\text{capital}} \times 100\%$

$= \frac{0.70}{1.00} \times 100\%$

$= \frac{70\%}{1.00}$

= 70%

Theme: Numbers and Numeration (M-08-039) **CODE A49**	Theme: Numbers and Numeration (M-08-039) **CODE A49**
Lesson Title: Introduction to Percentages Greater than 100	Lesson Title: Introduction to Percentages Greater than 100
Solve: 1. Calculate 90 as a percentage of 60. 2. Calculate 100 as a percentage of 40. 3 minutes	Answer: To calculate one number as a percentage of another, we write the numbers as a fraction and multiply by 100%: 1. 90 as a percentage of 60. $= \frac{90}{60} \times 100\% = \frac{900}{6} = 150\%$ 2. 100 as a percentage of 40. $= \frac{100}{40} \times 100\% = \frac{1000}{4} = 250\%$

Theme: Numbers and Numeration (M-08-039) **CODE A50**	Theme: Numbers and Numeration (M-08-039) **CODE A50**
Lesson Title: Introduction to Percentages Greater than 100	Lesson Title: Introduction to Percentages Greater than 100
Write the following percentages as fractions over 100 and simplify if possible. 1. 102% 2. 199% 3. 200% 3 minutes	Answer: 1. $102\% = \frac{102}{100} = \frac{51}{50}$ 2. $199\% = \frac{199}{100}$ 3. $200\% = \frac{200}{100} = 2$

Theme: Numbers and Numeration (M-08-40) **CODE A51**	Theme: Numbers and Numeration (M-08-40) **CODE A51**
Lesson Title: Calculations with Percentages Greater than 100	Lesson Title: Calculations with Percentages Greater than 100
Calculate: 1. 120% of 80. 2. 250% of Le 8,000.00 3 minutes	Answer: **Hint:** Write the percentage as a fraction over 100 and multiply by the original quantity. 1. 120% of 80 = $\frac{120}{100} \times 80 = \frac{960}{10} = 96$ 2. 250% of Le 8,000.00 $= \frac{250}{100} \times 8{,}000.00 = \frac{200{,}000.00}{10}$ $= \text{Le } 20{,}000.00$

Theme: Numbers and Numeration (M-08-41) **CODE A52**	Theme: Numbers and Numeration (M-08-41) **CODE A52**
Lesson Title: Ratio	Lesson Title: Ratio
What is a **ratio**? 1½ minutes	Answer: A **ratio** is a way of comparing two or more quantities. **For example,** if you compare the number of boys and girls in your class, that would be a ratio.

Theme: Numbers and Numeration (M-08-41) CODE A53	Theme: Numbers and Numeration (M-08-41) CODE A53
Lesson Title: Ratio	Lesson Title: Ratio
Express the following ratios as fractions: 1. 20 : 35 2. 200 : 800 2 minutes	Answer: 1. 20 : 35 $= \frac{20}{35}$ $= \frac{4}{7}$ 2. 200 : 800 $= \frac{200}{800}$ $= \frac{2}{8}$ $= \frac{1}{4}$
Theme: Everyday Arithmetic (M-08-42) CODE A54	Theme: Everyday Arithmetic (M-08-042) CODE A54
Lesson Title: Rate	Lesson Title: Rate
Define the term **rate.** 3 minutes	Answer: A **rate** is a special ratio that compares two values with **different** units of measurement. **For example**, Binta is paid Le 180 000 per month at their job. The different quantities are time and money.
Theme: Everyday Arithmetic (M-08-42) CODE A55	Theme: Everyday Arithmetic (M-08-42) CODE A55
Lesson Title: Rate	Lesson Title: Rate
Solve the following word problems: 1. Fatu sat a mathematics exam. She solved 20 problems in 40 minutes. What is her rate in minutes per problem? 2. A car needs 4 litres of petrol to travel 45 km. What is its rate of petrol consumption? 3 minutes	Answer: 1. Rate $= \frac{\text{minutes}}{\text{number of problems}}$ $= \frac{40}{20}$ = 2 minutes per problem 2. Rate $= \frac{\text{kilometres}}{\text{litres}}$ $= \frac{45}{4}$ = 11.25 kilometres per litre.
Theme: Everyday Arithmetic (M-08-044) CODE A56	Theme: Everyday Arithmetic (M-08-044) CODE A56
Lesson Title: Calculation of Unit Price	Lesson Title: Calculation of Unit Price
Solve the following word problems: 1. Bendu paid Le 80,000.00 for 20 litres of petrol. What is the unit price for each litre of petrol? 2. Juliet sells palm oil in large bottles that carry 5 litres. She sells each bottle for Le 65,000.00. What is the unit cost for each litre of palm oil? 3 minutes	Answer: 1. The rate for petrol that Bendu paid is $\frac{\text{Le } 80{,}000}{20 \text{ Litres}}$ Simplify the fraction to find the unit price: $= \frac{\text{Le } 4{,}000}{1 \text{ litre}} = \text{Le } 4{,}000.00/\text{litre}$ 2. The rate of Leones per litre is $\frac{\text{Le } 65{,}000}{5 \text{ litres}}$ Simplify the fraction to find the unit price. $= \frac{\text{Le } 13{,}000}{1 \text{ Litre}}$ $= \text{Le } 13{,}000.00/\text{litre}$

Theme: Everyday Arithmetic (M-08-045) CODE A57	Theme: Everyday Arithmetic (M-08-045) CODE A57
Lesson Title: Making Comparisons with Unit Price	Lesson Title: Making Comparisons with Unit Price
Michael sells beans. He sells 3 kg of beans for Le 42,000.00, and 5 kg of beans for Le 65,000.00. Which option has the better unit price? 4 minutes	Answer: Find the unit rate of for each option. That is, the price of 1 kg of beans. **Option 1:** The rate for the first option is: $= \frac{\text{Le } 42{,}000}{3 \text{ kg}}$ $= \text{Le } 14{,}000.00/\text{kg}$ **Option 2:** The rate for the second option is: $= \frac{\text{Le } 65{,}000}{5 \text{ kg}}$ $= \text{Le } 13{,}000.00/\text{kg}$ **Answer:** The unit rate for the second option is lower. It is better to buy 5 kg of beans for Le 120,000.00.
Theme: Everyday Arithmetic (M-08-046) CODE A58	**Theme: Everyday Arithmetic (M-08-046) CODE A58**
Lesson Title: Direct Proportion	Lesson Title: Direct Proportion
Define the term **proportion.** What is **direct proportion**? 3 minutes	Answer: • A **proportion** is two ratios set equal to each other. For example, "$\frac{2}{4} = \frac{5}{10}$ is a proportion: " • A **direct proportion** means that as one ratio increases, the other does too, at the same rate. As one ratio decreases, the other does as well, at the same rate. It can be Identified by symbol ($\propto$).
Theme: Everyday Arithmetic (M-08-046) CODE A59	**Theme: Everyday Arithmetic (M-08-046) CODE A59**
Lesson Title: Direct Proportion	Lesson Title: Direct Proportion
Consider the ratios 3 : 12 and 5 : 20. a. Write the ratios as fractions. b. What are the extremes and the means? c. Is this a direct proportion? 3 minutes	Answer: a. **Fractions:** $\frac{3}{12}$ and $\frac{5}{20}$ b. **Extremes:** $3 \times 20 = 60$ **Means:** $12 \times 5 = 60$ c. This is a direct proportion because the cross products are equal. So $\frac{3}{12} = \frac{5}{20}$
Theme: Everyday Arithmetic (M-08-047) CODE A60	**Theme: Everyday Arithmetic (M-08-047) CODE A60**
Lesson Title: Identifying Direct Proportions	Lesson Title: Identifying Direct Proportions
Write down the equation for **direct proportion** using the letters x, y and k. 1 minute	Answer: direct proportion: y = kx Consequently: $k = \frac{y}{x}$

Theme: Everyday Arithmetic (M-07-047) **CODE A61**	Theme: Everyday Arithmetic (M-08-047) **CODE A61**
Lesson Title: Identifying Direct Proportions	Lesson Title: Identifying Direct Proportions
y and x are directly proportional. When x = 10, y = 4. Find the value of the constant of proportionality, k. 3 minutes	Answer: Substitute x = 10 and y = 4 into y = kx. y = kx 4 = k × 10 $k = \frac{4}{10}$ $k = \frac{2}{5}$ The constant of proportionality is $k = \frac{2}{5}$.
Theme: Everyday Arithmetic (M-08-048) **CODE A62**	Theme: Everyday Arithmetic (M-08-048) **CODE A62**
Lesson Title: Solving Direct Proportions	Lesson Title: Solving Direct Proportions
Find the value of b that completes the direct proportion: $\frac{1}{b} = \frac{7}{21}$ 3 minutes	Answer: Cross multiply $21 \times 1 = 7 \times b$ Simplify $21 = 7b$ Divide both sides by 7 $\frac{21}{7} = b\frac{7}{7}$ $3 = b$ The answer is b = 3, and the complete proportion is $\frac{1}{3} = \frac{7}{21}$
Theme: Everyday Arithmetic (M-08-050) **CODE A63**	Theme: Everyday Arithmetic (M-08-050) **CODE A63**
Lesson Title: Direct Proportion Story Problems	Lesson Title: Direct Proportion Story Problems
Solve the following word problem: A woman sold 50 oranges in 4 hours. If she continues selling them at the same rate, how many can she sell in 6 hours? 3 minutes	Answer: Using the **ratio method**: $\frac{\text{50 oranges}}{\text{4 hours}} = \frac{\text{b}}{\text{6 hours}}$ where **b** is the number of oranges the woman can sell in 6 hours. Cross multiply $50 \times 6 = 4 \times b$ Simplify $300 = 4b$ Divide both sides by 4 $\frac{300}{4} = \frac{4 \times b}{4}$ $75 = b$ **Answer:** The woman can sell 75 oranges in 6 hours.
Theme: Everyday Arithmetic (M-08-051) **CODE A64**	Theme: Everyday Arithmetic (M-08-051) **CODE A64**
Lesson Title: Indirect Proportion	Lesson Title: Indirect Proportion
Define an **indirect proportion**. 1½ minutes	Answer: **Indirect proportion** means that as one ratio goes up, the other goes down. The ratios move in opposite directions instead of in the same direction like a directly proportional relationship.

<table>
<tr><td>Theme: Everyday Arithmetic (M-08-051) CODE A65</td><td>Theme: Numbers and Numeration (M-08-051) CODE A65</td></tr>
<tr><td>Lesson Title: Indirect Proportion</td><td>Lesson Title: Indirect Proportion</td></tr>
<tr><td>Write down the equation for indirect proportion or inverse proportions using the letters x, y and k.

1 minute</td><td>Answer:

Inverse proportions: $y = k\frac{1}{x}$ or $y = \frac{k}{x}$</td></tr>
<tr><td>Theme: Everyday Arithmetic (M-08-051) CODE A66</td><td>Theme: Everyday Arithmetic (M-08-051) CODE A66</td></tr>
<tr><td>Lesson Title: Indirect Proportion</td><td>Lesson Title: Indirect Proportion</td></tr>
<tr><td>Determine whether the following represents an indirect proportion or not.

$1 : 6 \propto 30 : 5$

3 minutes</td><td>Answer:
Write the ratios as fractions $\frac{1}{6}$ and $\frac{30}{5}$
For indirect proportion, write the second fraction as its inverse and set fractions as equal. $\frac{1}{6} = \frac{5}{30}$
Multiply the extremes and means.
extremes: $\mathbf{1} \times 30 = 30$
means: $5 \times 6 = 30$
This is an indirect proportion because the cross products are equal.</td></tr>
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