

أكاديمية أجيال المستقبل

مرخصة من قبل دولة الإمارات العربية المتحدة



Grade 6

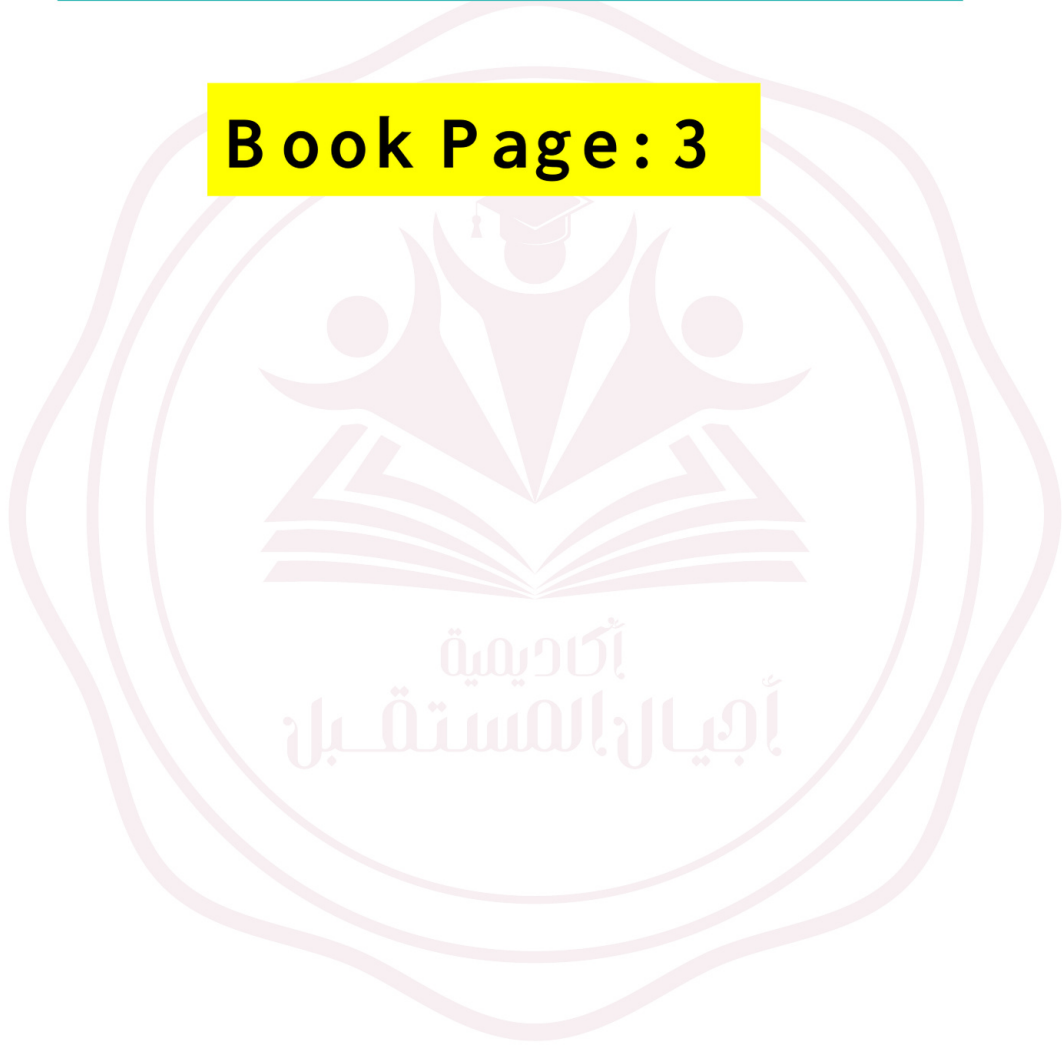
MATHEMATICS

2027

Unit 1 – L 1

Understand Ratios

Book Page : 3



Learn Understand Ratios

The table shows the ingredients needed to make 10 cups of lemonade. How does the number of cups of lemon juice compare to the total number of cups of lemonade?

Ingredient	Number of Cups
Lemon Juice	2
Simple Syrup	1
Water	7
	<u>10</u>

$$\frac{2}{10} = \frac{4}{20} = \frac{6}{30}$$

$$\frac{40}{20} = \frac{40}{20}$$

$$\frac{2}{10} = \frac{4}{20}$$

$$\frac{22}{10} \neq \frac{30}{11} \quad \times$$

$$\frac{25}{5} \neq \frac{21}{3} \quad \neq \frac{5}{5}$$

$$\frac{12}{2} = \frac{12}{4}$$

$$\frac{2}{3} = \frac{4}{6}$$

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Example 1 Understand Ratios

Page : 5

Pedro mixed two sample containers of blue paint with three sample containers of yellow paint to create his favorite shade of green paint. Pedro realized he did not have enough paint, so he added two more sample containers of each color.



Will the new mixture result in the same shade of green? Justify your response.

$$\frac{2}{3} \neq \frac{4}{5}$$

No
As it is not the same ratio.

Check

A recipe for rice calls for 6 cups of water and 3 cups of uncooked rice. Trinity only has 2 cups of uncooked rice. She reasons that because she subtracted 1 cup of rice, she needs to use a total of $6 - 1$, or 5 cups of water. Is her reasoning correct? Explain.

$$\frac{\text{water}}{\text{rice}} = \frac{6}{3} \neq \frac{5}{2}$$

not same ratio #

Example 2 Part-to-Whole Ratios

Page : 7

A florist is arranging flowers in vases to sell to her customers. She has two sizes of vases available: small and large. She wants the large vase to have the same ratio of flowers as the small vase.

If the large vase has a total of 36 flowers, how many are tulips?

Small Vase	
Flower	Quantity
Carnations	6 $\times 3$
Sunflowers	2 $\times 3$
Tulips	4 $\times 3$
	<u>12</u>

small
large

$$\frac{12}{36} = \frac{4}{?}$$

$$\begin{array}{r} 12 \\ 24 \\ \hline 36 \end{array}$$

$$4 \times 3 = \boxed{12} \text{ Tulips}$$

Check

Refer to the table in Example 2. If the large vase has a total of 36 flowers, how many are carnations?

$$\frac{12}{36} = \frac{6}{?}$$

12

$$12 \times 3 = 36$$

$$\boxed{6 \times 3 = 18 \text{ Carnations}}$$

in large vase .

Example 3 Part-to-Part Ratios

A bakery sells fresh-baked muffins, sold in small or large boxes. The manager of the bakery wants to maintain the same ratio of each type of muffin in the large box as in the small box.

Small Box	
Muffin	Quantity
Blueberry	2
Cinnamon	1
Chocolate	3

small large

If the large box contains 9 chocolate muffins, how many blueberry muffins are in the large box?

Small

$$3 \times 3 \rightarrow 9$$

$$\frac{3}{9} = \frac{2}{?}$$

$$\text{blueberry} = 2 \times 3 = \boxed{6}$$

Check

Refer to the table in Example 3. If the large box contains 9 chocolate muffins, how many cinnamon muffins are in the large box?

Chocolate

Cinnamon

$$x3 \rightarrow \frac{3}{9} = \frac{1}{?}$$

$$1 \times 3 = 3 \text{ cinnamon muffins}$$

✓

Practice

1. In Suri's coin purse, she has 6 dimes and 4 quarters. Martha has 5 dimes and 3 quarters. Suri thinks that the ratio of dimes to quarters in both purses is the same because they each have 2 more quarters than dimes. Is the same ratio of dimes to quarters maintained? Justify your response.

(Example 1)

$$\begin{array}{r} \text{suri} \\ 18 \\ 6 \\ 4 \end{array}$$

$\neq$

$$\begin{array}{r} \text{martha} \\ 20 \\ 5 \\ 3 \end{array}$$

NO

It is not the same ratio.

2. In a trivia game, Levi answered 8 questions correctly out of 10 turns in the game. He then answered the next three questions correctly. He reasoned that because he added 3 to both the total questions and his correct responses, that the ratio of correct answers to total questions remained the same. Is he correct? Justify your response.

(Example 1)

$$\begin{array}{r} 104 \\ 8 \\ 10 \end{array} \neq \begin{array}{r} 110 \\ 11 \\ 13 \end{array}$$

No, it is not the same ratio.

$$\begin{array}{l} 10 \longrightarrow 13 \\ 8 \longrightarrow 11 \end{array}$$

3-Riley needs to make **fruit punch** for the family reunion. **One batch of punch** has the ingredients shown.



Item	Cups
Cranberry Juice	4
Lemon Lime Soda	1
Orange Juice	2
Pineapple Juice	2

4

1

2

2

9



If the **punch bowl** holds **27** cups, how many **cups of orange juice** will she need to keep the ratio in a full punch bowl the same?

6

cup(s)

$$\frac{9}{27} = \frac{2}{?}$$

$$9 \times 3 = 27 \text{ so}$$

$$2 \times 3 = 6$$



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4-A **small fruit basket** contains the fruits shown. A large basket has the same ratio of fruits as the small basket.

Type of Fruit	Amount
Apple	6
Orange	5
Pear	3



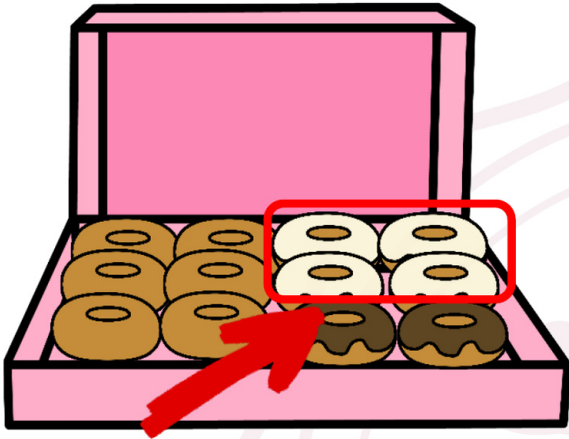
If the **large basket has 42 total pieces** of fruit, how many are **pears**?

piece(s) $\frac{14}{42} = \frac{3}{?}$

$$14 \times 3 = 42$$

so Pears = $3 \times 3 = 9$

5-Mrs. Santiago is buying doughnuts for her office. Each box contains 6 glazed, 4 cream-filled, and 2 chocolate-flavored doughnuts. If there were 20 total cream-filled doughnuts, how many chocolate doughnuts did she buy?



10

Chocolate doughnuts

Cream Filled

$$4 \times 5 \rightarrow 20$$

$$\text{Chocolate} = 2 \times 5 = 10$$

6. A small batch of trail mix contains 2 cups of raisins, 2 cups of peanuts, 1 cup of sunflower seeds, and 1 cup of chocolate coated candies. A large batch has the same ratio of ingredients as a small batch. If the large batch has 8 cups of peanuts, how many cups of sunflower seeds are in a large batch? (Example 3)

peanuts

$$2 \xrightarrow{\times 4} 8$$

sunflower..

$$1 \times 4 = \boxed{4}$$

7. **Open Response** A football coach needs to divide 48 players into two groups. He wants the ratio of players in Group 1 to players in Group 2 to be 1 to 3. How many players will be in Group 2?

$$G_1 : G_2$$

$$1 : 3$$

$$1 + 3 = \boxed{4}$$

$$48 \div 4 = \boxed{12}$$

$$\text{Group 2} = 3 \times 12 =$$

36
Players

$$\begin{array}{r} 12 \\ 4 \overline{) 48} \\ \underline{4} \\ 08 \\ \underline{8} \\ 0 \end{array}$$

Homework

9. Corey is making a modeling-clay mixture. One portion of the modeling clay has the amounts shown. If a full tub of modeling clay holds 33 pints, how many pints of glue will he need to keep the ratio in a full tub the same?

(Example 2)

$$11 \xrightarrow{\times 3} 33$$

Ingredient	Pints
Flour	5
Glue	3
Salt	2
Food Coloring	1

$$3 \times 3 = 9 \text{ pints of glue}$$

15. A small batch of oatmeal cookies contains 2 cups of raisins, 2 cups of oats, 1 cup of flour, and 1 cup of butter. A large batch of oatmeal cookies has the same ratio of ingredients as a small batch. If the large batch has 8 cups of raisins, how many cups of flour are in a large batch? (Example 3)

raisins

$$2 \xrightarrow{\times 4} 8$$

flour

$$1 \times 4 = 4 \text{ cups}$$