

RATIOS

A WHAT IS A RATIO?

A.1 EXPRESSING RATIOS IN DIFFERENT FORMS

Ex 1: The ratio of 3 to 2 is : or / .

Ex 2: The ratio of 4 to 5 is : or / .

Ex 3: The ratio of 7 to 3 is : or / .

Ex 4: The ratio of 6 to 9 is : or / .

Ex 5: What is the ratio of girls to boys?

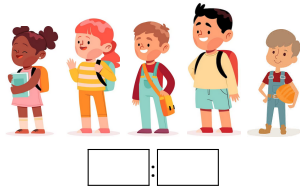


A.2 FINDING RATIOS IN PART-PART RELATIONSHIPS

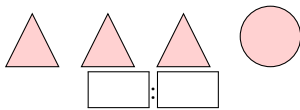
Ex 6: What is the ratio of girls to boys?



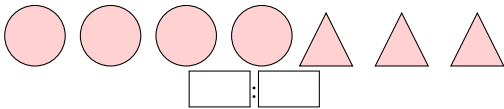
Ex 7: What is the ratio of girls to boys?



Ex 8: What is the ratio of triangles to circles?



Ex 9: What is the ratio of circles to triangles?

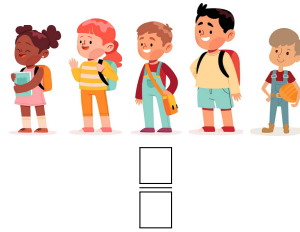


A.3 FINDING RATIOS IN WHOLE-PART RELATIONSHIPS

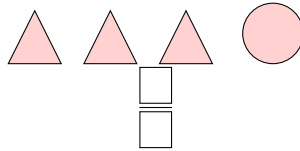
Ex 10: What is the ratio of girls to kids?



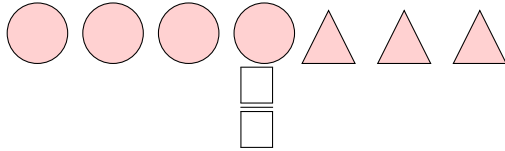
Ex 11: What is the ratio of girls to kids?



Ex 12: What is the ratio of triangles to shapes?



Ex 13: What is the ratio of circles to shapes?



Ex 14: Anna loves to read books. In all, she has read 12 mystery novels, 8 science fiction novels, 5 fantasy novels, and 3 historical novels.

What is the ratio of Anna's mystery novels to all of her books?

:

Ex 15: The table shows the number of different types of birds swimming at a lake.

Bird	Number
Seagulls	1
Ducks	9
Geese	7
Swans	2

What is the ratio of swans to total birds?

:

Ex 16: The table shows the number of different types of fruits in a basket.

Fruit	Number
Apples	3
Oranges	5
Bananas	4
Grapes	6

What is the ratio of apples to total fruits?

:

Ex 17: The table shows the number of different types of vehicles in a parking lot.

Vehicle	Number
Cars	10
Bicycles	6
Motorcycles	4
Trucks	2

What is the ratio of trucks to total vehicles?

:

Ex 18: Louis loves to play sports. In all, he has earned 5 swimming medals, 3 running medals, 6 cycling medals, and 2 triathlon medals.

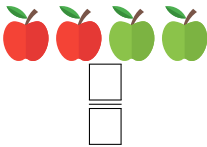
What is the ratio of Louis’s swimming medals to all of his medals?

:

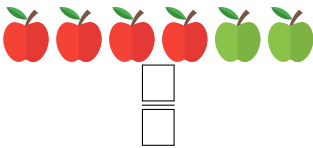
B EQUIVALENT RATIOS

B.1 SIMPLIFYING RATIOS

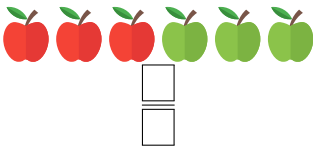
Ex 19: What is the ratio of red apples to all apples (write in simplified form)?



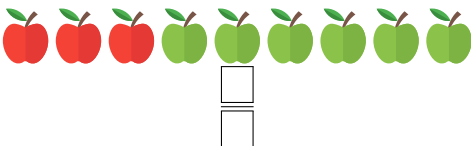
Ex 20: What is the ratio of red apples to all apples (write in simplified form)?



Ex 21: What is the ratio of red apples to all apples (write in simplified form)?



Ex 22: What is the ratio of red apples to all apples (write in simplified form)?



B.2 MULTIPLYING THE RATIOS

Ex 23: Multiply the ratio by 2:

3 : 5 =

:

Ex 24: Multiply the ratio by 3:

4 : 7 =

:

Ex 25: Multiply the ratio by 4:

5 : 3 =

:

Ex 26: Multiply the ratio by 5:

2 : 5 =

:

B.3 FINDING THE MISSING VALUE

Ex 27:

1 : 2 = 2 :

Ex 28:

2 : 3 =

:

6

Ex 29:

3 : 5 = 9 :

Ex 30:

4 : 7 =

:

14

Ex 31:

2 : 3 = 8 :

Ex 32:

3 : 2 =

:

20

C PROPORTION

C.1 IDENTIFYING THE PROPORTION

MCQ 33: Two vinaigrettes are being prepared:

- Vinaigrette A is made with 2 mL of oil and 1 mL of vinegar.
- Vinaigrette B is made with 4 mL of oil and 2 mL of vinegar.

Will these two vinaigrettes taste the same?

- ☐ Yes
- ☐ No

MCQ 34: On the cement package, it is indicated: 2 kilos of cement for 3 liters of water.

A worker prepares a mixture with 4 kilos of cement and 6 liters of water.

Did he follow the recommended proportions?



- ☐ Yes
☐ No

MCQ 35: Two smoothie recipes are being prepared:

- Smoothie A is made with 3 cups of fruit and 2 cups of yogurt.
- Smoothie B is made with 6 cups of fruit and 4 cups of yogurt.

Will these two smoothies taste the same?

- ☐ Yes
☐ No

MCQ 36: A gardener uses a fertilizer mix:

- The recommended mix is 5 grams of fertilizer per 2 liters of water.
- The gardener prepares a mixture with 10 grams of fertilizer and 4 liters of water.

Did the gardener follow the recommended proportions?

- ☐ Yes
☐ No

D UNITARY METHOD

D.1 BRINGING TO THE UNIT

Ex 37: A satellite makes 4 orbits around the Earth in 24 hours. How many hours does it take to complete one orbit?

hours

Ex 38: A car travels 500 kilometers in 5 hours. How many kilometers does it travel in 1 hour?

kilometers

Ex 39: A factory produces 720 widgets in 8 hours. How many widgets does it produce in 1 hour?

widgets

Ex 40: A baker uses 2 kilograms of flour to make 4 loaves of bread. How many kilograms of flour does it take to make 1 loaf of bread?

kilograms

D.2 CALCULATING FROM THE UNIT

Ex 41: To make 1 chocolate cake, 4 eggs are needed. How many eggs are needed to make 2 cakes?

eggs

Ex 42: The price of 1 kilogram of apples is \$2.5. What is the price for 3 kilograms of apples?

\$

Ex 43: To build 1 bookshelf, 10 wooden planks are needed. How many wooden planks are needed to build 3 bookshelves?

wooden planks

Ex 44: To paint 1 m², 0.2 liters of paint are needed. How many liters of paint are needed to paint 3 m²?

liters of paint

D.3 CONVERTING TO AND FROM THE UNIT

Ex 45: To make a special juice mix, you need 5 apples for every 15 oranges. How many oranges do you need if you have 3 apples?

oranges

Ex 46: A baker uses 2 kilograms of flour to make 4 loaves of bread. How many kilograms of flour does it take to make 3 loaves of bread?

kilograms


Ex 47: An artist mixes 3 liters of red paint with 6 liters of blue paint to create a purple shade. How many liters of red paint are needed to mix with 9 liters of blue paint to maintain the same shade of purple?

liters


Ex 48: To make a magic potion, you need 10 drops of dragon's blood for every 5 drops of phoenix tears. How many drops of phoenix tears do you need if you have 4 drops of dragon's blood?

drops of phoenix tears


D.4 SOLVING NUMERATOR

Ex 49: 


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

Ex 50: 

$$\frac{8}{4} = \frac{\boxed{}}{5}$$


Ex 51: 

$$\frac{3}{2} = \frac{\boxed{}}{5}$$


Ex 52: 

$$\frac{5}{4} = \frac{\boxed{}}{3}$$

D.5 SOLVING DENOMINATOR

Ex 53: 

$$\frac{5}{10} = \frac{2}{\boxed{}}$$

Ex 54: 

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

Ex 55: 

$$\frac{4}{5} = \frac{3}{\boxed{}}$$

Ex 56: 


$$\frac{5}{2} = \frac{3}{\boxed{}}$$

E CROSS-MULTIPLICATION METHOD


E.1 FINDING A QUANTITY

Ex 57:  4 tickets cost 28 dollars. Find the cost of 6 tickets.


dollars

Ex 58:  A recipe requires 200 grams of flour to make 8 cookies. How much flour is needed to make 12 cookies?


grams

Ex 59:  To make a certain shade of paint, you need 1.5 liters of blue paint for every 3 liters of base paint. How much blue paint is needed if you have 4.5 liters of base paint?

liters

Ex 60:  A car travels 120 kilometers on 7.5 liters of fuel. Assuming the car's fuel consumption rate is constant, how much fuel is needed to travel 200 kilometers?

liters

Ex 61:  On a map, 4 centimeters represents a real distance of 10 kilometers. If two cities are 6 centimeters apart on the map, what is the actual distance between them in kilometers?

kilometers