RATIOS

A DEFINITION

A.1 EXPRESSING RATIOS IN DIFFERENT FORMS

Ex 1: The ratio 3 to 2 is ☐:☐.

Ex 2: The ratio 5 to 4 is ☐:☐.

Ex 3: The ratio 7 to 3 is ☐:☐.

Ex 4: The ratio 8 to 5 is ☐:☐.

Ex 5: The ratio 10 to 6 is ☐:☐.

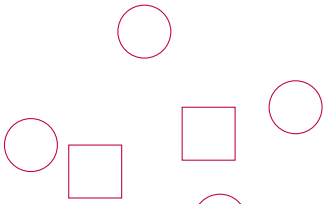
B PART-PART AND PART-WHOLE RATIOS

B.1 FINDING RATIOS IN PART-PART

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

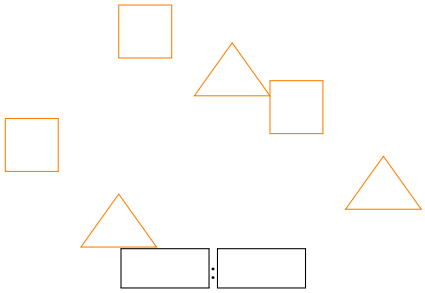
☐:☐

Ex 7: What is the ratio of circles to rectangles?



☐:☐

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



☐:☐

Ex 9: What is the ratio of oranges to lemons?

☐
☐

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

☐
☐

B.2 FINDING RATIOS IN PART-WHOLE

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

☐:☐

Ex 12: What is the ratio of boys to kids?

☐:☐

Ex 13: 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?

☐:☐

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 that are 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?

$\square$: $\square$

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?

$\square$: $\square$

C EQUAL RATIOS

C.1 MULTIPLYING THE RATIOS

Ex 18: Multiply the ratio by 2:

$3 : 5 =$ $\square$: $\square$

Ex 19: Multiply the ratio by 3:

$4 : 7 =$ $\square$: $\square$

Ex 20: Multiply the ratio by 4:

$5 : 3 =$ $\square$: $\square$

Ex 21: Multiply the ratio by 5:

$2 : 5 =$ $\square$: $\square$

C.2 FINDING THE MISSING VALUE

Ex 22:

$1 : 2 = 2 :$ $\square$

Ex 23:

$2 : 3 =$ $\square$ $: 6$

Ex 24:

$3 : 5 = 9 :$ $\square$

Ex 25:

$4 : 7 =$ $\square$ $: 14$

Ex 26:

$2 : 3 = 8 :$ $\square$

Ex 27:

$3 : 2 =$ $\square$ $: 20$

D PROPORTION

D.1 IDENTIFYING THE PROPORTION

MCQ 28: 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 29: 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 30: 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 31: 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

E UNITARY METHOD

E.1 BRINGING TO THE UNIT

Ex 32: A satellite makes 4 orbits around the Earth in 24 hours. How many hours does it take to complete one orbit?

$\square$ hours

Ex 33: A car travels 500 kilometers in 5 hours. How many kilometers does it travel in 1 hour?

$\square$ kilometers

Ex 34: A factory produces 720 widgets in 8 hours. How many widgets does it produce in 1 hour?

$\square$ widgets

Ex 35: 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?

$\square$ kilograms

E.2 CALCULATING FROM THE UNIT

Ex 36: To make 1 chocolate cake, 4 eggs are needed. How many eggs are needed to make 2 cakes?

$\square$ eggs

Ex 37: The price of 1 kilogram of apples is \$2.5. What is the price for 3 kilograms of apples?

\$ $\square$

Ex 38: To build 1 bookshelf, 10 wooden planks are needed. How many wooden planks are needed to build 3 bookshelves?

$\square$ wooden planks

Ex 39: To paint 1 m^2, 0.2 liters of paint are needed. How many liters of paint are needed to paint 3 m^2?

$\square$ liters of paint

E.3 CONVERTING TO AND FROM THE UNIT

Ex 40: 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?

$\square$ oranges

Ex 41: A baker uses 2 kilograms of flour to make 4 loaves of bread. How many kilograms of flour does it take to make 3 loaf of bread?

$\square$ kilograms

Ex 42: 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?

$\square$ liters

Ex 43: 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?

$\square$ drops of phoenix tears

E.4 SOLVING NUMERATOR

Ex 44:

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

Ex 45:

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

Ex 46:

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

Ex 47:

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

E.5 SOLVING DENOMINATOR

Ex 48:

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

Ex 49:

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

Ex 50:

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

Ex 51:

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

F CROSS-MULTIPLICATION METHOD

F.1 FINDING A QUANTITY

Ex 52: 4 tickets cost 28 dollars. Find the cost of 6 tickets.

$\square$ dollars

Ex 53: A recipe requires 200 grams of flour to make 8 cookies. How much flour is needed to make 12 cookies.

$\square$ grams

Ex 54: 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.

$\square$ liters

Ex 55: 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 56:  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