PROPORTIONALITY

A WHAT IS PROPORTIONALITY?

A.1 RECOGNIZING A PROPORTIONAL TABLE

MCQ 1: Is this table proportional?

x	1	2	3
y	15	30	45

☐ Yes

☐ No

MCQ 2: Is this table proportional?

x	2	4	6
y	3	7	9

☐ Yes

☐ No

MCQ 3: Is this table proportional?

x	2	4	6
y	3	6	9

☐ Yes

☐ No

MCQ 4: Is this table proportional?

x	1	2	4
y	2	4	7

☐ Yes

☐ No

A.2 TESTING PROPORTIONAL RELATIONSHIPS IN WORD PROBLEMS

MCQ 5: Is the price of oranges proportional to the quantity?

Quantity (kg)	1	2	3
Price ($)	1.5	3	4.5

☐ Yes, the price is proportional to the quantity.

☐ No, the price is not proportional to the quantity.

MCQ 6: Is the height of children proportional to their age?

Age (years)	3	6	9
Height (cm)	90	120	150

☐ Yes, the height is proportional to the age.

☐ No, the height is not proportional to the age.

MCQ 7: Is the distance traveled proportional to the time spent walking?

Time (hours)	1	2	3
Distance (km)	5	10	15

☐ Yes, the distance is proportional to the time.

☐ No, the distance is not proportional to the time.

MCQ 8: Is the number of pages read proportional to the number of days?

Days	2	4	6
Pages	12	20	32

☐ Yes, the number of pages is proportional to the number of days.

☐ No, the number of pages is not proportional to the number of days.

A.3 CALCULATING THE COEFFICIENT OF PROPORTIONALITY IN PROPORTIONAL TABLES

Ex 9: In this proportional table,

x	1	2	3
y	15	30	45

calculate the coefficient of proportionality.

Ex 10: In this proportional table,

x	2.5	5	7.5
y	6.25	12.5	18.75

calculate the coefficient of proportionality.

Ex 11: In this proportional table,

x	2	4	6
y	5	10	15

calculate the coefficient of proportionality.

Ex 12: In this proportional table,

x	2.5	5	7.5
y	10	20	30

calculate the coefficient of proportionality.

A.4 CALCULATING THE UNIT RATE IN PROPORTIONAL CONTEXTS

Ex 13: Larbi is making a large batch of his special lemonade. The table below shows the number of cups of lemon juice needed for a certain number of liters of lemonade.

Lemon juice (cups)	2	4	6
Lemonade (Liter)	3	6	9

Calculate the number of liters of lemonade per cup of lemon juice.

☐

Ex 14: Emma is preparing a special mix for concrete. The table below shows the number of kilograms of cement needed for a certain number of liters of water.

Cement (kg)	4	8	12
Water (L)	6	12	18

Calculate the number of liters of water per kilogram of cement.

☐

Ex 15: Alex is preparing a fruit salad for a party. The table below shows the number of apples used to make a certain number of servings of fruit salad.

Apples (number)	2	4	6
Servings	5	10	15

Calculate the number of servings per apple.

☐

Ex 16: Maya is downloading videos for a school project. The table below shows the number of hours spent downloading and the total number of gigabytes downloaded.

Time (hours)	1.2	2.4	3.6
Data (GB)	6	12	18

Calculate the number of gigabytes downloaded per hour.

☐

A.5 CALCULATING THE UNIT RATE IN PROPORTIONAL CONTEXTS

Ex 17: If 2 kilograms of apples cost 5 dollars, what is the cost per kilogram?

☐ dollars per kilogram

Ex 18: If a recipe requires 4 cups of flour to make 8 cupcakes, how many cups of flour are needed per cupcake?

☐ cups of flour per cupcake

Ex 19: If a car travels 150 kilometers in 3 hours, what is the average speed of the car in kilometers per hour?

☐ kilometers per hour

Ex 20: If a factory produces 200 widgets in 4 hours, what is the production rate in widgets per hour?

☐ widgets per hour

A.6 USING UNIT RATES TO CALCULATE A TOTAL

Ex 21: The price of gasoline is \$1.90 per liter. I fill up 30 liters.
What is the total cost of the fill-up?

☐ dollars

Ex 22: A printer can print 18 pages per minute. How many pages can it print in 7 minutes?

☐ pages

Ex 23: One kilogram of apples costs \$3.20. I buy 6 kilograms.
What is the total cost?

☐ dollars

Ex 24: A factory produces 250 bottles per hour. How many bottles are produced in 9 hours?

☐ bottles

A.7 USING UNIT RATES TO CALCULATE A MISSING QUANTITY

Ex 25: The price of gasoline is \$1.9 per liter. You spend \$57 to fill up your tank.
How many liters of gasoline did you purchase?

☐ liters

Ex 26: A gardener plants 48 flowers per row. If she plants a total of 336 flowers, how many rows did she plant?

☐ rows

Ex 27: A baker bakes 36 cookies per tray. She baked 288 cookies in total. How many trays did she use?

☐ trays

Ex 28: Sarah completes 24 math exercises per hour. She managed to finish 168 exercises today.
How many hours did she spend working on math?

☐ hours

B CALCULATING A FOURTH PROPORTIONAL

B.1 CALCULATING A FOURTH PROPORTIONAL

Ex 29: A train travels 180 km in 3 hours at a constant speed. How far will it travel in 5 hours at the same speed?

☐ km

Ex 30: You buy 21 liters of gasoline. The total cost is \$39.90. How much will you pay for 35 liters at the same price per liter?

☐ dollars

Ex 31: A printer prints 72 pages in 4 minutes at a constant speed. How many pages will it print in 15 minutes at the same speed?

☐ pages

B.2 FINDING MISSING VALUES IN A PROPORTIONAL TABLE

Ex 32: In a classroom, the total number of notebooks is proportional to the number of students. Find the missing values in the table of notebooks distribution.

Number of students	5	15	☐
Number of notebooks	☐	30	50

Ex 33: In an apartment building, the maintenance fees paid are proportional to the floor area of the property for each owner. Find the missing values in the table of fees for some owners.

Floor area (m^2)	3	10	☐
Fees (\$)	☐	130	195

Ex 34: In a factory, the amount of fruit juice produced is proportional to the amount of fruits used. Find the missing values in the table of juice production for some batches.

Amount of fruits (kg)	5	20	☐
Amount of juice (liters)	☐	60	90

Ex 35: In a bakery, the amount of dough needed is proportional to the number of loaves of bread produced. Find the missing values in the table of dough requirements for some batches.

Number of loaves	4	12	☐
Amount of dough (kg)	☐	6	10