Rate

Rate is specific type of ratio.

A **rate** is a comparison of two quantities with different units.

Example1: A car traveled at 100 km/h. This is a rate of speed.

Example 2: John makes $7.00 per hour at his new job. This is a wage rate.

Example 3: The car uses gas at a rate of 12L/100km. This is the rate of gas consumption)

Example 4: My new laser printer copies at a rate of 22 ppm which means 22 pages per minute.

Example 5: The label on the paint can says that 1L covers 10 metres squared. The rate of coverage by this paint is $1L/10\,m^2$

Certain rates are expressed in very specific ways. Wages are usually based on an hourly rate or a yearly rate. Gas consumption is always expressed per 100km. The speed of a car is always in kilometers per hour.

When the information about a rate is not expressed in this standard way, we must change it as in the examples below.

A car travels 200 km in 4 hours. To find the rate of travel for the car, both quantities are divided by 4 to find that the car travels at a rate of 50km/h. (It travels 50 km every hour)

An employee makes $800 for a 40 hour work week. To find the hourly rate both quantities must be divided by 40 and the result is $20/hour.

Like ratios, we can change the look of a rate by dividing or multiplying both quantities by the same number.

Ratio and Proportion.

Name:_____

The Rule of 3.

Example: 7 apples cost $4.33. How much for 17?

	Apples	cost
1.	7	$4.33
2.	1	$\frac{4.33}{7} = 0.69$ (divide)
3.	17	17x0.69 = $11.73

1. 9 oranges cost $4.23 How much for 23?

	Oranges	cost
1.		
2.		
3.		

2. 4 chairs cost $319 92 how much will 13 cost?

	Chairs	cost
1.		
2		
3.		

3, $69.95 was the price of 5 T-shirts. How much for 12?

1.

2.

3.

4. $23.70 was the price of 6 mugs. How much for 19?

1.

2.

3.

5. 120 kilo-watt hours of electricity cost $45.00. How much will 1000 cost?

1.

2.

3.

6. The 11 minute call to London cost $4.95. How much would it be for half an hour?

1.

2

3.

7. 8 kilometres is 5 miles. How many miles is 75.km?

1.

2.

3.

8. Do question 7 backwards. How many km. Is 92 miles?

	Miles.	Km.
1.		
2.		
3.		

9. An inch (ONE inch) is 2.54cm. How many cm in a foot? (one foot is 12 inches.)
(There are only TWO steps here.)

1.

2.

10. Do question 9 backwards. How many inches in a metre?

	cm.	inches
1	2.54	1
2.		
3.		

11. A kilogram is two an a quarter pounds (lbs) How many lbs is 70kg.?

1.

2.

12. How many kg is 135lbs?

1.

2.

3.

13 A litre is one and three quarter pints. How many pints is 45 l.?

1.

2.

14. How many litres is 20 pints? (2 decimal places)

15. The 15km taxi ride cost $25.50. What would a 24 km trip cost?

16. How far would $51.00 get you? (In the taxi)

Ratio and Proportion.

Name:_____

The Rule of 3.

Example: 7 apples cost $4.33. How much for 17?

	Apples	cost
1.	7	$4.33
2.	1	$\frac{4.33}{7} = 0.69$ (divide)
3.	17	17x0.69 = $11.73

Unit Rate

Rate $ ... / Apple

1. 9 oranges cost $4.23 How much for 23?

	Oranges	cost
1.	9	4.23
2.	1	0.47
3.	23	10.81

Unit Rate $ ... / orange.

2. 4 chairs cost $319 92 how much will 13 cost?

	Chairs	cost
1.	4	$ ...
2	1	$ ...
3.	13	$ 1037.74

What is the ... cost?

3, $69.95 was the price of 5 T-shirts. How much for 12?

	T-shirt	Cost
1.	5	$ 69.95
2.	1	$ 13.99
3.	12	$ 167.88

4. $23.70 was the price of 6 mugs. How much for 19?

	MUGS	$ COST
1.	6	$ 23.70
2.	1	$ 3.95
3.	19	$ 75.05

5. 120 kilo-watt hours of electricity cost $45.00. How much will 1000 cost?

	ELECTRICITY	$ COST
1.	120	$ 45
2.	1	$\frac{45}{120}$ $ 0.375/Watt
3.	1000	$ 375

6. The 11 minute call to London cost $4.95. How much would it be for half an hour?

	TIME (MIN)	$ COST
1.	11	$ 4.95
2	1	$\frac{\$4.95}{11}$ $ 0.45/min.
3.	30	$ 13.50

7. 8 kilometres is 5 miles. How many miles is 75.km?

	DIST (KM)	DIST (MI)
1.	8	5
2.	1	$\frac{5\text{ MI}}{8\text{ KM}} = 0.625/\text{KM}$
3.	7.5	4.6875 MI / 7.5 KM

8. Do question 7 backwards. How many km. Is 92 miles?

	Miles.	Km.
1.	5	8 km
2.	1	5 mi = 1.6 km/mi
3.	92	147.2 km.

9. An inch (ONE inch) is 2.54cm. How many cm in a foot? (one foot is 12 inches.)
(There are only TWO steps here.)

1. 1 in 2.54 cm
2. 12 in 12 × 2.54 = 30.48 cm.

10. Do question 9 backwards. How many inches in a metre? (100 cm = 1 m)

	cm.	inches
1	2.54 cm	1 inch.
2.	1 cm	1 inch / 2.54 cm = 0.394 in / cm.
3.	100 cm.	394 in

11. A kilogram is two an a quarter pounds (lbs) How many lbs is 70kg.?

1. 1 kg. 2.25 lbs.
2. 70 kg 70 × 2.25 = 157.5 lb

Ratio and Proportion.

Name:_____

The Rule of 3.

Example: 7 apples cost $4.33. How much for 17?

	Apples	cost
1.	7	$4.33
2.	1	$\frac{4.33}{7} = 0.69$ (divide)
3.	17	17x0.69 = $11.73

1. 9 oranges cost $4.23 How much for 23?

	Oranges	cost
1.	9	4.23
2.	1	0.47
3.	23	23 x 0.47 = 10.81

2. 4 chairs cost $319 92 how much will 13 cost?

	Chairs	cost
1.	4	
2	1	
3.	13	

3, $69.95 was the price of 5 T-shirts. How much for 12?

1.	5	
2.	1	
3.		