

Proportional means equivalent ratios

PROPORTIONAL

Winnie's Earnings

Hours Worked	Winnie's Earnings (\$)
1	12
2	24
3	36
4	48
5	60

Handwritten annotations: A red " $\times 2$ " with a left-facing curly bracket is next to the first two rows. A blue " $\times 5$ " with a right-facing curly bracket is next to the last three rows. A red " $\times 2$ " with a right-facing curly bracket is next to the last two rows.

PROPORTIONAL

Cost of Pencils

Number of Pencils	Cost (\$)
2	0.50
4	1.00
6	1.50
8	2.00
10	2.50

Handwritten annotations: A blue " $\times 2$ " with a left-facing curly bracket is next to the first two rows. A red " $\times 2$ " with a left-facing curly bracket is next to the last two rows. A blue " $\times 2$ " with a right-facing curly bracket is next to the first two rows. A red " $\times 2$ " with a right-facing curly bracket is next to the last two rows.

NOT PROPORTIONAL

Depth of Snow

Number of Hours	Depth of Snow (cm)
1	2
2	5
3	9
4	14
5	15

Handwritten annotations: A red " $\times 2$ " with a left-facing curly bracket is next to the first two rows. A red " $\times 2 = 4$ " with a right-facing curly bracket is next to the last two rows. The value 5 in the second row is circled in red and crossed out. The words "NOT RIGHT" are written in red to the right of the table.

PRACTICE

1. Decide if each table below is proportional or not and explain why.

a)

Number of Quarters	Value (\$)
2	0.50
5	1.25
8	2.00
20	5.00
30	7.50

b)

Number of Laps Run	Time (min)
1	1.5
2	3.5
3	5.5
4	8
5	10

c)

Temperature ($^{\circ}\text{C}$)	Temperature ($^{\circ}\text{F}$)
-40	-40
-20	4
0	32
20	68
40	104

6. Madison sells bottles of water on the Halifax Harbour waterfront. She earns \$0.25 for each bottle that she sells.

a) Use this information to copy and complete the table below.

Number of Bottles Sold	Amount Earned (\$)
10	
20	
50	
100	
500	

10. A doughnut shop charges 85¢ for one doughnut, \$4.95 for half a dozen, and \$8.95 for one dozen. Does this represent a proportional situation? Justify your answer.

USING ALGEBRA TO SOLVE PROPORTIONAL OR FRACTION PROBLEMS

Ex. Heidi bought a case of 12 bottles of water for \$3.
How many bottles can she purchase for \$15?

$$\times 4 \left(\frac{3}{12} = \frac{15}{x} \right) \times 4$$

$$15 \times 4 = \boxed{60}$$

Solve each proportion.

$$a) \left(\frac{4}{12} = \frac{9}{x} \right) \times 3$$

$$x = 27$$

$$b) \left(\frac{5}{n} = \frac{40}{56} \right) \times ?$$

$$40 \times ? = 56$$

$$\div$$

$$56 \div 40 = 1.4$$

$$? = 1.4$$

$$5 \times 1.4 = n$$

$$7 = n$$

$$c) \left(\frac{6}{7} = \frac{a}{225.75} \right) \times ?$$

$$7 \div 6 = 1.\overline{16}$$

$$? = 1.\overline{16}$$

$$a \times 1.\overline{16} = 225.75$$

$$225.75 \div 1.\overline{16} = 193.5$$