

Grade 8 Math – Number Ratios, Rates and Unit Conversions Practice Test

Name: _____ Class: _____

1. The following is a picture of all the tiles of a Scrabble game. You are to show the following Ratios:



a) A's to B's

$$9:2$$

b) A's to All tiles

$$9:100$$

c) All possible vowels to All tiles

$$43:100$$

2. Javier loves Lays STAX. He sees online that both Dollarama and Walmart

DOLLARAMA

\$29.75

- Original flavoured potato chips
- Zero trans fat
- 155g
- A case contains 17 packs

WALMART

Lay's Stax Original Potato Chips

Lay's

163 g

★★★★☆ (3)

\$2.27



Which is the better deal? (try to compare \$/100g)

$$17 \times 155g / \text{pack}$$

$$2635g / \text{case}$$

$$\text{cost} = \$ = \$29.75 / 2635g$$

$$\div 26.35 \left(\begin{array}{l} \$29.75 : 2635g \\ x : 100g \end{array} \right) = 26.35$$

$$x = \$1.13$$

$$\therefore \text{cost is } \$1.13 / 100g$$

$$\div 1.62 \left(\begin{array}{l} \$x : 100g \\ \$2.27 : 162g \end{array} \right) \div 1.62$$

$$162g \times = 100g \times \$2.27$$

$$x = \frac{100g \times \$2.27}{162g}$$

$$= \$1.40$$

$$\therefore \text{cost is } \$1.40 / 100g$$

• Dollarama is the better deal

3. Mahmood goes for a long walk. If his app shows that he traveled 13.75 km in 2.5 hours. What is his speed in km/h?

$$S = \frac{d}{T}$$

$$= \frac{13.75 \text{ km}}{2.5 \text{ h}}$$

$$= 5.5 \text{ km/h}$$

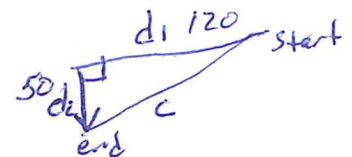


∴ Mahmood's speed is 5.5 km/h.

4. Bihn went for a car ride. She and her mom drive West for 2 hours at 60 km/h and then got out and walked South for 1 hour going 5 km/h. Using the Pythagorean formula ($A^2 + B^2 = C^2$), find the distance from the start to the finish point to the nearest kilometer.

$$\begin{aligned} d_1 &= S \times t \\ &= 60 \text{ km/h} \times 2 \text{ h} \\ &= 120 \text{ km} \end{aligned}$$

$$\begin{aligned} d_2 &= S \times t \\ &= 5 \text{ km/h} \times 1 \text{ h} \\ &= 5 \text{ km} \end{aligned}$$



$$\begin{aligned} A^2 + B^2 &= C^2 \\ (50 \text{ km})^2 + (120 \text{ km})^2 &= C^2 \\ 2500 \text{ km}^2 + 14400 \text{ km}^2 &= C^2 \\ 16900 \text{ km}^2 &= C^2 \\ \sqrt{16900 \text{ km}^2} &= C \\ 130 \text{ km} &= C \end{aligned}$$

∴ Bihn and her mom were 130 km from where they started.

5. Use these to find the number of units after conversion. Round to two decimal places. (3 each)

Units	To units	Linear Conversion factor	Square Conversion Factor	Cubic Conversion Factor
Centimetres	Inches	2.54 cm/in	6.4516 cm ² /in ²	16.3871 cm ³ /in ³
Metre	Yard	0.9144 m/yd	0.8361 m ² /yd ²	0.7646 m ³ /yd ³
Inches	Feet	12 in/ft	144 in ² /ft ²	1728 in ³ /ft ³
Feet	Yard	3 ft/yd	9 ft ² /yd ²	27 ft ³ /yd ³

a) 29.2608 m is $\div 0.9144 \text{ m/yd}$ 32 yards

b) 108 inches is $\div 12 \text{ in/ft}$ 9 feet

c) 83.61 m² is $\div 0.8361 \text{ m}^2/\text{yd}^2$ 100 yd²

d) 99 ft² is $\div 9 \text{ ft}^2/\text{yd}^2$ 11 yd²

e) 409.6775 cm³ is $\div 16.3871 \text{ cm}^3/\text{in}^3$ 25 in³

f) 45.876 m³ is $\div 0.7646 \text{ m}^3/\text{yd}^3$ 60 yd³

g) 1.44676 ft³ is $\times 1728 \text{ in}^3/\text{ft}^3$ 2500.00 in³

6. A farm has both ducks and geese. There are 68 ducks and 102 geese. If Vladimir down the road has 24 geese and wants to have the same ratio of ducks to geese, how many ducks should he buy? If the cost is \$4.85/duck, how much will this cost Vladimir?

$$\begin{array}{cc} d & : g \\ 68 & : 102 \\ x & : 24 \end{array}$$

cross multiply

$$\begin{aligned} x \times 102g &= 68d \times 24g \\ x &= \frac{68d \times 24g}{102g} \\ &= 16d \end{aligned}$$

$$\begin{aligned} \text{cost} &= \$/\# \times \# \\ \$4.85/d \times 16d \\ &= \$77.60 \end{aligned}$$

∴ Vladimir would need to buy 16 ducks at a cost of \$77.60

7. A map shows a scale of 3cm : 12km. How far would 32.5cm on the map represent in actual distance? (Hint: This is the distance Bhin drove in Question 4.)

$$\begin{array}{cc} M & \text{RL} \\ 3\text{cm} & 12\text{km} \end{array}$$

$$32.5\text{cm} \quad x$$

$$3\text{cm } x = 12\text{km} \times 32.5\text{cm}$$

$$\begin{aligned} x &= \frac{12\text{km} \times 32.5\text{cm}}{3\text{cm}} \\ &= \frac{390\text{km cm}}{3\text{cm}} \\ &= 130\text{km} \end{aligned}$$

∴ Real distance is 130km.

Answers:

1. a) $9:2$

b) $9:100$

c) $43:100$

2. Dollar store is $\$1.13/100g$ and Walmart is $\$1.40/100g$.

3. 5.5 km/h

4. 130 km

5. a) 32 yds

b) 9 ft

c) 100 yd^2

d) 11 yd^2

e) 25 in^3

f) 60 yd^3

g) 2500 in^3

6. 16 ducks needed, would cost $\$77.60$.

7. Distance is 130 km .