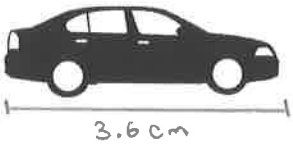
Mr. McKean's Foundations of Math 11 Full Name:_____

Chapter 1 Review /10 marks

The answer key is posted at www.dmckean.wix.com/school. You are responsible for marking your review. Full solutions are on the key. If you do not know how to solve the question look at the key.

1. Determine the scale factor of each. You will need a ruler.



Original

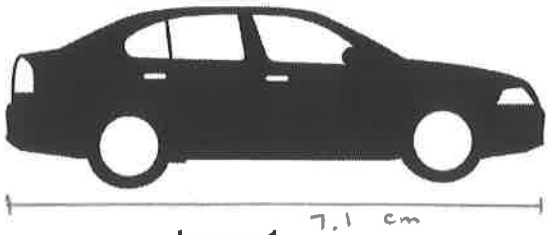


Image 1

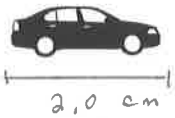


Image 2

SCALE FACTOR = $\frac{\text{IMAGE}}{\text{ACTUAL}}$ $\frac{7.1}{3.6} = 1.972$ $\frac{2.0}{3.6} = 0.5\overline{5}$

Scale of image 1: 1.972	Scale of image 2 0.56

2. Convert 30 km/h to meters per second

$30\ \text{km} \times \frac{1000\ \text{m}}{1\ \text{km}} = 30000\ \text{m}$

$1\ \text{h} \times \frac{3600\ \text{s}}{} = 3600\ \text{s}$

$\frac{30,000\ \text{m}}{3,600\ \text{s}} = 8.3\ \text{m/s}$

Convert 45 miles/h to km/h

$45\ \text{MILES} \times \frac{1.609\ \text{km}}{1\ \text{MILE}} = 48.105\ \text{km/h}$

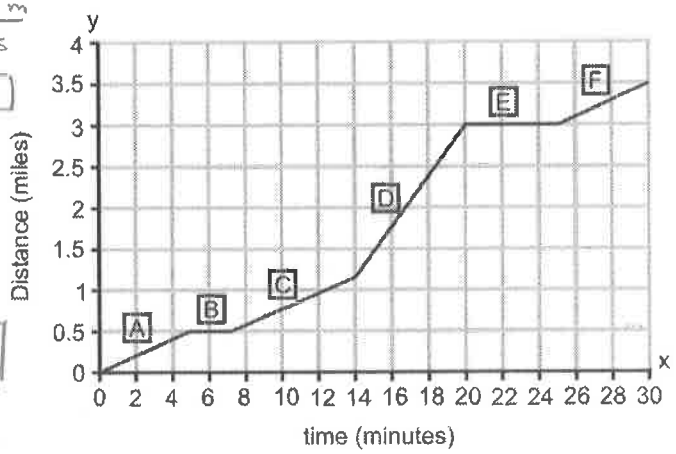
4.5 km = ____mm

10x FOR 6 JUMPS

k h da B A S E d c mm

4.500000 → 4,500,000 mm

3. Use the graph to the right,



   a. What is a rate and what rate can be determined from the graph on the right?
   b. What is the rate at A?
   c. What letter indicates the greatest speed?

a. A RATE IS A WAY TO COMPARE TWO DIFFERENT QUANTITIES. EX. THIS GRAPH IS SHOWING DISTANCE COMPARED TO TIME.

b. $\frac{0.5\ \text{MILES}}{2\ \text{MIN}} = 0.25\ \text{MILES/MIN}$

C. D HAS GREATEST SPEED BECAUSE LINE HAS THE GREATEST SLOPE.

4. A drawing of a house is 18cm long. The actual house is 13 m. What is the scale of the drawing?

DIFF. UNITS

13 m = 1300 cm

$\frac{1300\ \text{cm}}{18\ \text{cm}} = 72.2$

THE LENGTH OF THE HOUSE IS 72.2 x LONGER THAN THE DRAWING

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RADIUS = 6"

5. A sub woofer has a diameter of 12". Find the area of a similar woofer that is scaled down by a factor of 2. area = pi r^2

6" RADIUS ÷ 2 = 3" RADIUS

ORIGINAL AREA

$\pi 6^2 = 113.1$ INCHES^2 ÷ (SCALE FACTOR)^2 = 28.27 INCHES^2 OR $\pi(3)^2$ = 28.27 INCHES^2

6. Two small 10" pepperoni pizzas cost $23.50 after tax and one large 14" pepperoni pizza is $20.75. What is the better deal? (which one do you get more pizza for your dollar)

SMALL RADIUS = 5"

$\pi(5)^2 \times 2$ PIZZAS = 157.1 in^2

157.1 in^2 / $23.50 = 6.68 in^2/$

LARGE

$\pi(7)^2 = 153.9$ in^2

153.9 in^2 / $20.75 = 7.41 in^2 PER $

↑ MORE PIZZA PER DOLLAR

7. A small 10" pizza is an original. What is the scale factor if a large 14" pizza is an enlargement.

↳ $\pi r^2 = \pi 5^2 = 78.53$ ↳ $\pi r^2 = \pi 7^2 = 153.9$

COMPARE LENGTH

$\frac{14}{10} = 1.4$

OR COMPARE AREA

$\frac{153.9}{78.53} = 1.96$ TAKE Sq ROOT $\sqrt{1.96} = 1.4$

8. A fish tank is 120 liters. What is the volume of a fish tank that is enlarged by a scale of 2.5?

VOLUME $120 \times (\text{SCALE FACTOR})^3$ $120 \times (2.5)^3 = 1875$ LITRES

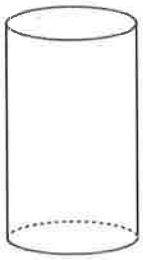
9. A water bottle has a volume of 500 ml (0.5 L) and an enlarged bottle is 4 liters. What is the scale factor of the larger bottle.

← DIFF UNITS →

$\frac{4\text{ L}}{0.5} = 8$, TAKE CUBE ROOT $\sqrt[3]{8} = 2$

CHECK $0.5\text{ L} \times (\text{SCALE FACTOR})^3$

$0.5 \times 2^3 = 4$ L ✓



10. A tanker truck holds 28,000L of fuel (I asked the driver at the gas station and he told me this value). Your fuel tank is 65L.

Assuming both are similarly shaped cylinders calculate:

a. What are possible dimensions for the fuel tank of your vehicle?
b. What scale factor do you multiply your fuel tank by to get the volume of the tanker truck?

Volume = pi r^2 x height

(a) r = 20cm HEIGHT = 52 cm

VOLUME = $\pi 20^2 \times 52$

= 65,345 cm^3

SAME AS

65,345 mL

CLOSE ENOUGH TO 65L = 65.3 L

(b) $\frac{28{,}000\text{L}}{65\text{ L}} = 430.76$

NOW CUBE ROOT

$\sqrt[3]{430.76} = 7.55$

CHECK $65\text{L} \times (7.55)^3 = 27{,}999$ L