Algebra 1 Unit 1 worksheet: Units, quantities and a sensible level of accuracy

Name _____ Date _____ Period _____

1. Hannah's hike has three parts: 6 km along a road, 250 m up a trail and 550 m across a ridge.

(a) Find the total length of the hike in meters.

(b) A friend adds 6 + 250 + 550 and says the hike is 806 m long. Explain what went wrong.

2. Work out each result with its unit, and say what kind of quantity it is (a length, an area, a time, a speed, and so on). If a result cannot be worked out, say why.

(a) $12\ \text{m} \times 5\ \text{m}$

(b) $360\ \text{km} \div 4\ \text{h}$

(c) $45\ \text{L} \div \dfrac{9\ \text{L}}{1\ \text{min}}$

(d) $2\ \text{h} \times \dfrac{90\ \text{km}}{1\ \text{h}}$

(e) $4\ \text{kg} + 0.5\ \text{m}$

3. Samir wants to write the length of a 5400-second video in hours. He writes

$$5400\ \text{s} \times \frac{3600\ \text{s}}{1\ \text{h}} = 19{,}440{,}000$$

(a) What unit does his product actually have?

(b) Write the correct chain and give the length of the video in hours.

4. Hannah runs a machine that labels 30 bottles every 3 minutes. How long does it take to label 930 bottles? Give the time in hours and minutes.

Free sample from math.wiki for classroom use. Do not post. math.wiki

5. Maya measures her walking stride: 10 strides cover 7.3 m, measured with a tape to the nearest tenth of a meter. She counts 1850 strides on her walk to school.

(a) How long is her walk in kilometers? Give the answer to a sensible accuracy.

(b) Which of the numbers 10, 7.3 and 1850 limit the accuracy of the answer, and why?

6. Hiro wants the number of seconds in a 30-day month. He writes

$$30\ \text{days} \times \frac{24\ \text{h}}{1\ \text{day}} \times \frac{100\ \text{min}}{1\ \text{h}} \times \frac{60\ \text{s}}{1\ \text{min}} = 4{,}320{,}000$$

(a) Show that the units in his chain cancel to leave seconds.

(b) His answer is still wrong. Find the mistake and the correct number of seconds.

(c) What can checking the units catch in a set-up like this, and what can it not catch?

7. A pump moves 100 liters of water per minute. Running nonstop at that rate, how many cubic meters of water does it move in one day? Write the whole conversion as one chain of factors before doing any arithmetic.

8. Mason's dishwasher uses 12 liters of water per load, a figure from its label given to two significant figures. The family runs 5 loads a week, and water costs 4.20 dollars per cubic meter. Taking a year as 52 weeks, about how much does the dishwasher's water cost in a year? Say which numbers are exact and give the cost to a sensible accuracy.

Free sample from math.wiki for classroom use. Do not post. math.wiki