

Name:

### 1.10 Classwork: Precision and percent error

Write formula for percent error in your notebook

$$\epsilon = \left| \frac{v_A - v_E}{v_E} \right| \times 100\%$$

1. Round each value to the *nearest thousandth*.

(a)  $e = 2.7182818\dots$

(Euler's number)

(c)  $\phi = 1.618033989\dots$

(the golden ratio)

(b)  $\pi$

(d)  $\sqrt{3}$

2. Round each value to the nearest hundred thousand.

(a) 1,694,251

(population of the Manhattan)

(b) 2,405,464

(population of Queens)

3. Find the percent error for each approximation.

(a)  $\pi \approx \frac{355}{113}$  (Zu's ratio)

(c)  $2^{10} \approx 1000$  (kilobyte)

(d) 1 gallon  $\approx$  4 liters

(b) 365 days  $\approx$  52 weeks

(use conversion table's value)

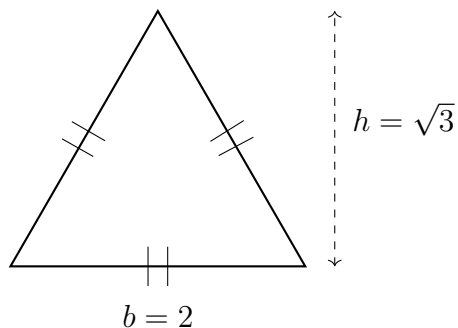
4. Convert each measure. Show the multiplication by the appropriate conversion factor (fraction), including units.

Example: Approximate the number of weeks in  $T = 2$  years.

$$T = 2 \text{ years} \times \frac{52 \text{ weeks}}{1 \text{ year}} = 104 \text{ weeks}$$

- (a) Find the length in yards of a quarter-mile track.
- (b) Find the number of liters in a 15 gallon gas tank.
5. Find the number of hours in 4 weeks. (multiply by two conversion factors, weeks to days, then days to hours)
6. Find the area of the equilateral triangle two ways and quantify the error.

- (a) Use the exact height of the triangle,  
 $h = \sqrt{3}$ .



- (b) Assume the height is the same as the base,  $h = 2$ .

- (c) Calculate the percent error.