Apprenticeship Math 12
ASSIGNMENT: Measurement Review

Name: _____

Date: _____

1. Select appropriate imperial and SI units to measure each of the following items.

	Item	Appropriate Imperial Unit	Appropriate SI Unit
a)	Length of a school bus		
b)	Length of a $20 bill		
c)	Height of a 2-story building		
d)	Width of your pencil		
e)	Distance from PG to Smithers		

2. Use a ruler measure each line to the nearest millimetre.

a) _____ mm
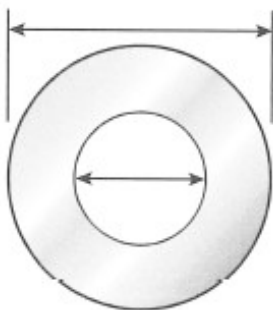
b) _____ mm

c) _____ mm

3. Use a ruler to measure each line to the nearest $\frac{1}{16}$ of an inch.

a) _____ in.

b) _____ in.

c) _____ in.

4. Use a ruler to measure and record each measurement on the washer using imperial and SI units.

	Measurement	Imperial Units	SI Units
a)	outer diameter		
b)	inner diameter		

1 foot = 12 inches	1 inch = 2.54 cm	1 cm = 10 mm
1 yard = 3 feet	1 foot = 30.48 cm	1 m = 100 cm
1 yard = 36 inches	1 yard = 0.9144 m	1 m = 1000 mm
1 mile = 1760 yards	1 mile ≈ 1.609 km	1 km = 1000 m
1 mile = 5280 feet		

5. Convert the following measurements to feet and inches (e.g. 5'10"):

   a) 28 inches   _____ ft _____ in

   b) $77\frac{7}{16}$ inches   _____ ft _____ in

6. Convert the following. If rounding is necessary, give your answer to the nearest hundredth.

   a) 2.2 mi   _____ ft

   b) 9 ft 7 in   _____ yd

   c) 7.5 km   _____ cm

   d) $7\frac{2}{3}$ yd   _____ mm

   e) 142 cm   _____ yd

   f) 20 m   _____ ft

7. Steve Nash is 6′3″ tall. Shaquille O'Neal is 7′1″ tall. What is the difference between their heights in centimetres? Round your answer to the nearest tenth.

_____

8. While traveling in the United States you see a sign that says the next gas station is 110 miles away. You look at your fuel gauge and know that you have enough gas left for about 150 km. Do you have to stop now for gas, or do you continue driving?

_____

9. Match the following terms with the best definition:

_____ accuracy

A. the margin of error of a measurement

_____ precision

B. how close a measured value is to the true value

_____ uncertainty

C. the smallest unit of measurement on the measuring device being used

10. What are the precision and uncertainty of the following measurements?

	Measurement	Precision	Uncertainty
a)	2.5 km		
b)	184 cm		
c)	405.33 kg		
d)	78.1°C		

11. For each image, state the precision of the measuring device and determine the length of the item, including its uncertainty.

a)

precision: _____   length: _____ ± _____

b)

precision: _____   length: _____ ± _____

c)
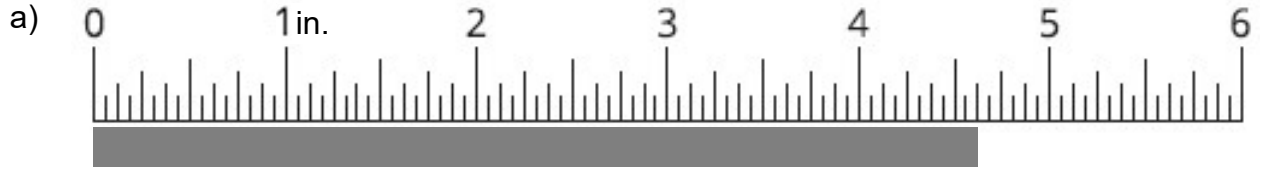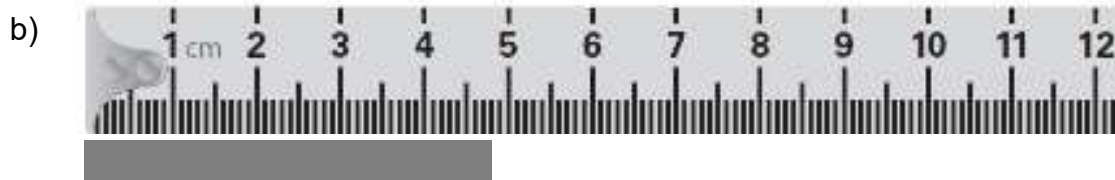
precision: _____   length: _____ ± _____

12. Indy is measuring the span of a coupling. The coupling has an actual length of **48.302 mm**. Write the measurement Indy would record, including the measurement uncertainty, if he measured the coupling with the following tools.

a) A meter stick marked in centimeters   _____ ± _____

b) A tape measure marked in millimeters   _____ ± _____

c) A digital caliper with precision of 0.02 mm   _____ ± _____

13. Jacob went fishing and caught three salmon. He weighed the fish on a scale, and found them to weigh 9.3 kg, 4.7 kg, and 8.4 kg.

    a) What is the precision of the scale? _____

    b) What is the uncertainty for each of the fish weights? _____

    c) What is the combined weight of the three fish, including uncertainty?

    _____ ± _____

    d) What is the maximum combined weight of the three fish? _____

    e) What is the minimum combined weight of the three fish? _____

14. Mary is cutting carpet to be installed in a hallway. She has a piece of carpet that is **18 ft 9$\frac{7}{8}$ in.** long and she needs to cut off a piece that is **6$\frac{1}{4}$ in.** long. If she uses the tape measure shown to make her measurements, what is length, including uncertainty, of the remaining length of carpet?

    _____ ± _____

1. a) feet, metres   b) inches, centimetres   c) feet, metres
   d) inches, millimetres   e) miles, kilometres
2. a) 18 mm   b) 35 mm   c) 53 mm
3. a) $3\frac{1}{2}$"   b) $2\frac{13}{16}$"   c) $1\frac{1}{4}$"
4. a) 35 mm, $1\frac{3}{8}$"   b) 17 mm, $\frac{11}{16}$"
5. a) 2 ft 4 in   b) 6 ft $5\frac{7}{16}$ in
6. a) 11 616 ft   b) 3.19 yd   c) 750 000 cm   d) 7010.4 mm   e) 1.55 yd   f) 65.62 ft
7. 25.4 cm
8. stop now, you don't have enough gas left (110 miles = 177.03 km)
9. B, C, A
10. a) 0.1 km, ±0.05 km   b) 1 cm, ±0.5 cm   c) 0.01 kg, ±0.005 kg
    d) 0.1 °C, ±0.05 °C
11. a) $\frac{1}{16}$", $4\frac{5}{8}$" ± $\frac{1}{32}$"   b) 1 mm, 48 mm ± 0.5 mm (or 4.8 cm ± 0.05 cm)
    c) 0.5 cm, 9.5 cm ± 0.25 cm
12. a) 5 cm ± 0.5 cm   b) 48 mm ± 0.5 mm   c) 48.32 mm ± 0.01 mm
13. a) 0.1 kg   b) ±0.05 kg   c) 22.4 kg ± 0.15 kg   d) 22.55 kg   e) 22.25 kg
14. 18 ft $3\frac{5}{8}$ in. ± $\frac{1}{8}$ in.