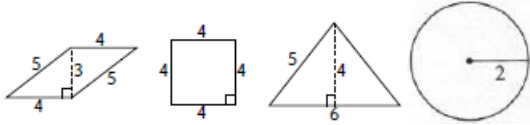


## NON-GRADED GEOMETRY SELF-ASSESSMENT

**(1)** Name the figure, and then find its area and perimeter:



**Parallelogram**

$$A = bh = 4 \times 3 = \mathbf{12} \quad P = 5 + 4 + 5 + 4 = \mathbf{18}$$

**Square**

$$A = s^2 = 4 \times 4 = \mathbf{16} \quad P = 4s = 4(4) = \mathbf{16}$$

**Triangle**

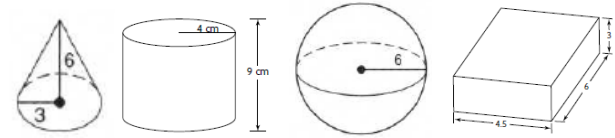
$$A = \frac{1}{2}bh = \frac{1}{2} \times 6 \times 4 = \mathbf{12} \quad P = 5 + 5 + 6 = \mathbf{16}$$

**Circle**

$$A = \pi r^2 = \pi \times 2 \times 2 \approx \mathbf{12.56} \quad C = 2\pi r = 2 \times \pi \times 2 \approx \mathbf{12.56}$$



**(2)** Name the figure, and then find its volume:



**Cone**

$$V = \frac{1}{3}\pi r^2 h = \frac{1}{3} \times \pi \times 3 \times 3 \times 6 = \frac{4}{3} \times \pi \times 3 \times 3 \times 3 \approx \mathbf{56.52}$$

**Cylinder**

$$V = \pi r^2 h = \pi \times 4 \times 4 \times 9 \approx \mathbf{452.16 \text{ cm}^3}$$

**Sphere**

$$V = \frac{4}{3}\pi r^3 = \frac{4}{3} \times \pi \times 6 \times 6 \times 6 \approx \mathbf{904.32}$$

**Cuboid**

$$V = lwh = 6 \times 4.5 \times 3 = \mathbf{81}$$



**(3)** (a) How many seconds are in 2 years?

$$\frac{2 \text{ yr}}{1 \text{ yr}} \times \frac{365 \text{ da}}{1 \text{ da}} \times \frac{24 \text{ hr}}{1 \text{ hr}} \times \frac{60 \text{ min}}{1 \text{ min}} \times \frac{60 \text{ sec}}{1 \text{ min}} = 63,072,000 \text{ s}$$

(b) How many inches are in 3 miles?

$$\frac{3 \text{ mi}}{1 \text{ mi}} \times \frac{5280 \text{ ft}}{1 \text{ mi}} \times \frac{12 \text{ in}}{1 \text{ ft}} = 190,080 \text{ in}$$

(c) Change 15 square feet to square inches.

$$\frac{15 \text{ sq ft}}{1 \text{ sq ft}} \times \frac{144 \text{ sq in}}{1 \text{ sq ft}} = 2,160 \text{ sq in}$$

(d) Change 45 square feet to square yards.

$$\frac{45 \text{ sq ft}}{9 \text{ sq ft}} \times \frac{1 \text{ sq yd}}{9 \text{ sq ft}} = 5 \text{ sq yd}$$

(e) Change 3 square yards to square inches.

$$\frac{3 \text{ sq yd}}{1 \text{ sq yd}} \times \frac{1296 \text{ sq in}}{1 \text{ sq yd}} = 3,888 \text{ sq in}$$

(f) Change 2 tons to ounces.

$$\frac{2 \text{ Tons}}{1 \text{ Ton}} \times \frac{2000 \text{ lbs}}{1 \text{ Ton}} \times \frac{16 \text{ oz}}{1 \text{ lbs}} = 64,000 \text{ oz}$$

(g) Change 86 ounces to pounds and write the remainder in ounces.

$$\frac{86 \text{ oz}}{16 \text{ oz}} \times \frac{1 \text{ lb}}{16 \text{ oz}} = 5 \text{ r } 6 = 5 \text{ lb } 6 \text{ oz}$$

(h) Change 5.5 gallons to pints.

$$\frac{5.5 \text{ gal}}{1 \text{ gal}} \times \frac{4 \text{ qt}}{1 \text{ gal}} \times \frac{2 \text{ pt}}{1 \text{ qt}} = 44 \text{ pints}$$

(i) Change 5 liters to milliliters

The metric system is in Base 10:

kilo- hecto- deka- L deci- centi- milli-

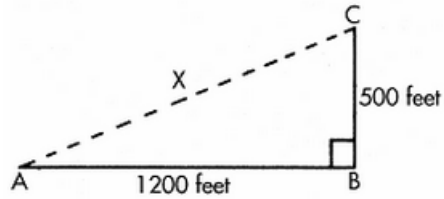
0 0 0 5 0 0 0

0 0 0 5 0 0 0

**5 liters = 5000 milliliters**



**(4)** (a) Find the length of the hypotenuse:



Pythagorean Theorem  $\rightarrow a^2 + b^2 = c^2$

$$(500)^2 + (1200)^2 = x^2$$

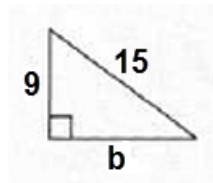
$$250000 + 1440000 = x^2$$

$$1442500 = x^2$$

$$\sqrt{1442500} = x$$

**hypotenuse is 1300 feet**

(b) Find the length of side b:



Pythagorean Theorem  $\rightarrow a^2 + b^2 = c^2$

$$(9)^2 + b^2 = (15)^2$$

$$81 + b^2 = 225$$

Subtract 81 from both sides:

$$b^2 = 225 - 81 = 144$$

$$b = \sqrt{144}$$

**Side b is 12**



(5) Name the five figures below:



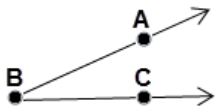
Ray AB



Line segment AB



Line AB



Point A

Angle ABC

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(6) Draw and label the following:

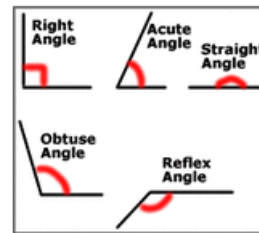
(a) obtuse angle

(b) right angle

(c) reflex angle

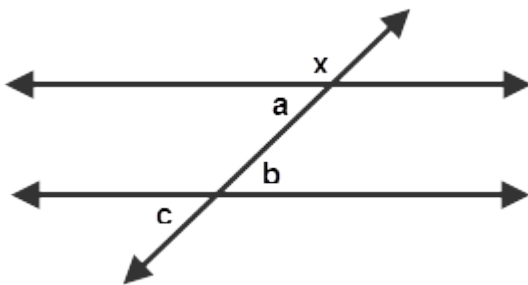
(d) straight angle

(e) acute angle



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(7) Given that  $m\angle x = 125^\circ$ , find  $m\angle a$ ,  $m\angle b$ , and  $m\angle c$ .



$\angle a$  is supplementary to  $\angle x \rightarrow 180 - 125 = \angle a = 55^\circ$

$\angle a$  and  $\angle b$  are alternate interior (equal)  $\rightarrow \angle b = 55^\circ$

$\angle c$  and  $\angle b$  are vertical angles (equal)  $\rightarrow \angle c = 55^\circ$

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(8) Suppose that  $m\angle x = 29^\circ$ ,

(a) Find the supplement of  $\angle x$

(b) Find the complement of  $\angle x$

Supplementary means they add to  $180^\circ$

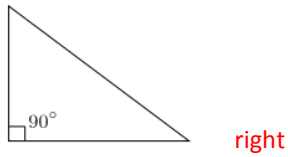
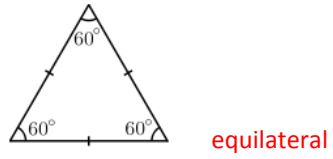
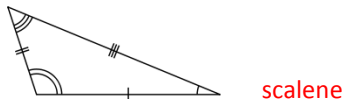
$$180^\circ - 29^\circ = 151^\circ$$

Complementary means they add to  $90^\circ$

$$90^\circ - 29^\circ = 61^\circ$$

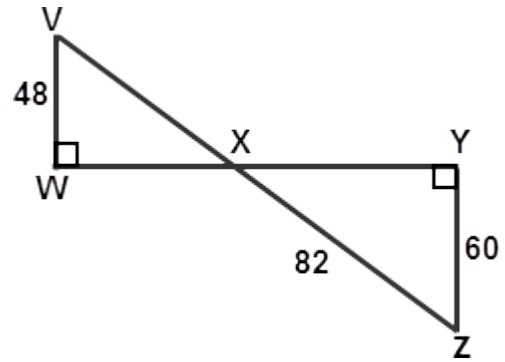
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(9) Classify the following triangles:



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(10) Find the length of line segment VX.

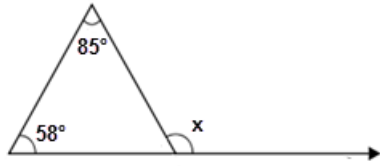


The two triangles are similar so we can use a proportion to find the length of line segment VX:

$$\frac{60}{82} = \frac{48}{x} \rightarrow 82 \times 48 \div 60 = 65.6$$

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(11) Find  $m\angle x$ :



Every triangle has  $180^\circ$  in it:

$$85^\circ + 58^\circ + ? = 180^\circ$$

The missing interior angle is  $37^\circ$

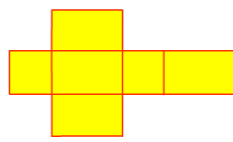
Angle  $x$  and the missing interior angle of  $37^\circ$  are supplementary (add to  $180^\circ$ )

$$180^\circ - 37^\circ = 143^\circ$$

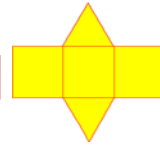
Alternately, the sum of the two given angles is supplementary to the missing interior angle. As such the sum of the two given angles is the measure of Angle  $x$  ( $58^\circ + 85^\circ = 143^\circ$ )



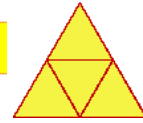
(12) Name the solid from the net:



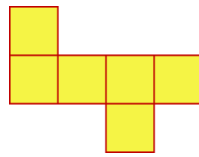
cuboid



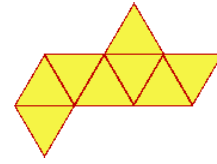
triangular prism



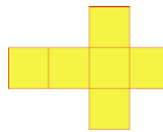
triangular pyramid



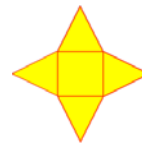
cube



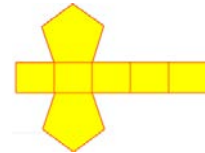
octahedron



cube



rectangular pyramid



pentagonal prism

pyramid

prism

