**Finding Missing Angles**
Extra Practice

Name: __ANSWERS__

1. Use the diagram.
   (a) Why is $2x + 30 = x + 45$?
   (b) Find the measure of $\angle ABF$.
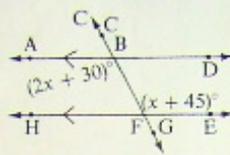
a) $2x+30 = x+45$ since Alternate Interior Angles are equal.

b) $2x+30 = x+45$
$2x-x = 45-30$
$x = 15$

$\angle ABF$
$= 2x+30$
$= 2(15)+30$
$= 30+30$
$= 60$

2. Use the diagram.
   (a) Write an equation.
   (b) Find the measure of $\angle EGH$ and $\angle AGH$. Give reasons for your answers.

a) $x+60 = 3x+40$

b) $x+60 = 3x+40$
$60-40 = 3x-x$
$20 = 2x$
$10 = x$

$\angle EGH$
$= 3x+40$
$= 3(10)+40$
$= 30+40$
$= 70$
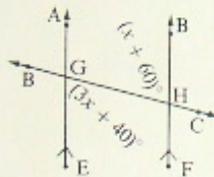
$\angle AGH =$
$180-70 = 110$

3. Use the diagram to find the measure of
   (a) $\angle ABC = 40$ (b) $\angle CBD = 140$
   (c) $\angle HEC = 40$ (d) $\angle FEB = 140$
   Give reasons for your answers above.
   a) Alt. Exterior
   b) Supplementary
   c) Vertically Opposite
   d) Supplementary
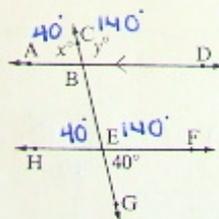
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**4.** Find the values of a, b, and c for the following diagrams.

(a)

(b)

(c)
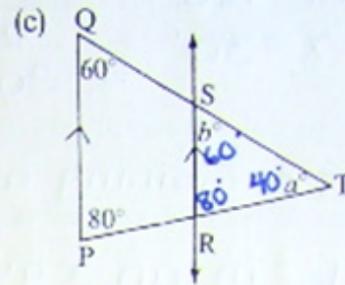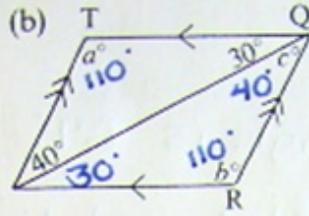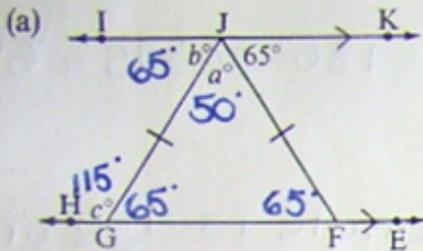
5.   Explain why
(a) $x° = 60°$ Alternate Interior
(b) $y° = 40°$ Alternate Interior
(c) $\angle DAB + \angle BAC + \angle CAE = 180°$

They are supplementary angles.
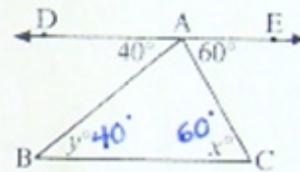
6.   Use the diagram.
     (a) Why can you write $x° + 60° + 40° = 180°$?
     (b) Find x.
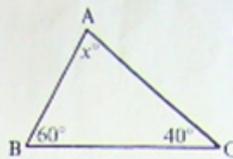
a) $x + 60 + 40 = 180°$
Since the interior
angles in a triangle
add to $180°$.

b) $x + 60 + 40 = 180°$
$x + 100 = 180°$
$x = 180 - 100$
$x = 80°$

7.   Use the diagram.
     (a) Explain why $2x° + 3x° + 4x° = 180°$.
   (b) Find the measure of $\angle A$.
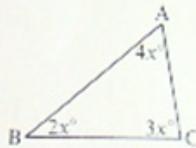
a) $2x + 3x + 4x = 180°$
Since the interior
angles in a triangle
add to $180°$.

b) $2x + 3x + 4x = 180°$
$9x = 180°$
$x = 20°$

$\angle A = 4x$
$= 4(20)$
$= 80°$

8. For each triangle, find the missing measures. Justify your answers.

(a)   (b)   (c)   (d)   (e)
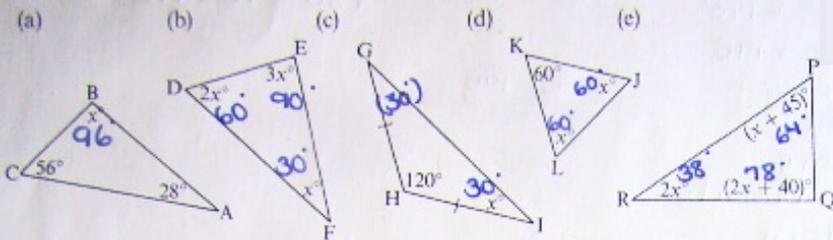
$$6x = 180°$$
$$x = 30°$$

$$\frac{180° - 120°}{2}$$
$$= 30°$$

$$2x + x + 45° + 2x + 40 = 180$$
$$5x + 85 = 180°$$
$$5x = 95°$$
$$x = 19°$$

$$180° - 36° - 75° = 69°$$

9. (a) Two angles of a triangle are 36° and 75°. Find the measure of the third angle.   The remaining angle is 69°.

(b) Show that the measure of each angle in an equilateral triangle is 60°.

Each angle in an equilateral triangle is $\frac{180°}{3}$ or 60°.

10.   Find the values of *a*, *b*, and *c* for the following diagrams.

(a)

(b)

(c)

(d)

(e)

(f)