Composite Transformation, Area, and Perimeter Review
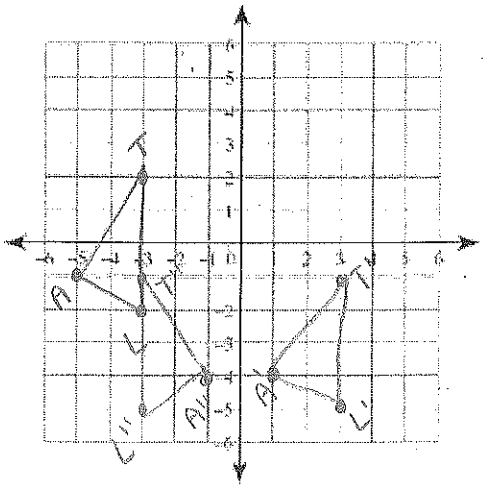
Part I: Composite Transformations:

a) Translate $\triangle ALT$ if $A(-5, -1)$, $L(-3, -2)$, $T(-3, 2)$ by the rule $(x, y) \rightarrow (x +6, y - 3)$, then reflect the image over the y-axis.
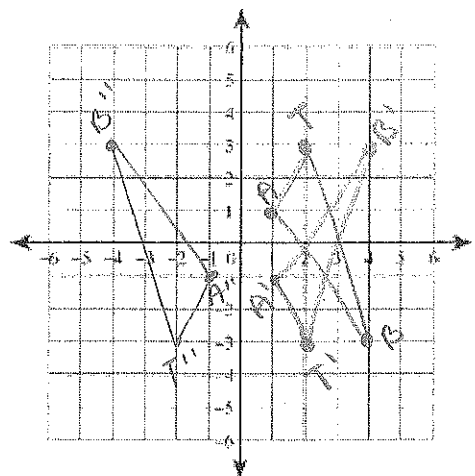
$A'(\underline{1}, \underline{-4})$
$L'(\underline{3}, \underline{-5})$
$T'(\underline{3}, \underline{-1})$

$A''(\underline{-1}, \underline{-4})$
$L''(\underline{-3}, \underline{-5})$
$T''(\underline{-3}, \underline{-1})$

b) Reflect $\triangle TAB$ if $T(2, 3)$, $A(1, 1)$, and $B(4, -3)$ over the x-axis, then reflect the image over the y-axis.

$T'(\underline{2}, \underline{-3})$
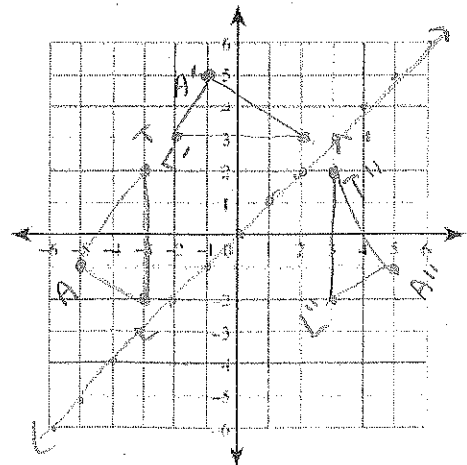$A'(\underline{1}, \underline{-1})$
$B'(\underline{4}, \underline{3})$

$T''(\underline{-2}, \underline{-3})$
$A''(\underline{-1}, \underline{-1})$
$B''(\underline{-4}, \underline{3})$

c) Rotate $\triangle ALT$ if $A(-5, -1)$, $L(-3, -2)$, $T(-3, 2)$ $90°$ clockwise about the origin, then reflect the image over the line $y = x$.
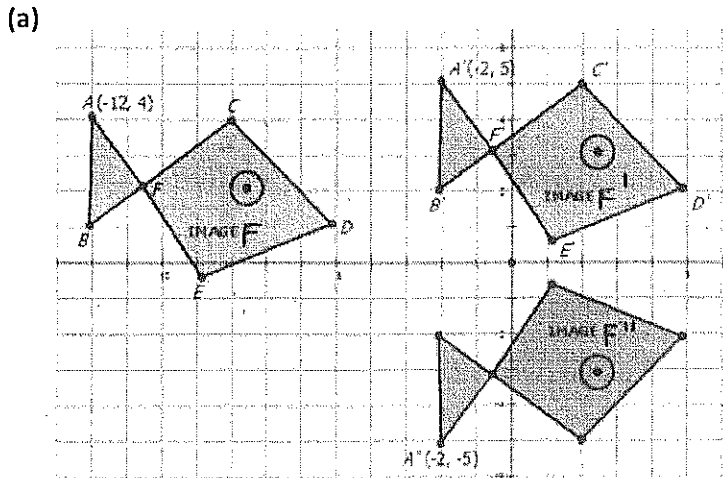
$A'(\underline{-1}, \underline{5})$
$L'(\underline{-2}, \underline{3})$
$T'(\underline{2}, \underline{3})$

$A''(\underline{5}, \underline{-1})$
$L''(\underline{3}, \underline{-2})$
$T''(\underline{3}, \underline{2})$

Part II: Describe the Transformation

(a)

Coordinates shown: $A(-12, 4)$, $A'(-2, 5)$, $A''(-2, -5)$, with figures labeled C, B, D, E, F and IMAGE F, IMAGE F', IMAGE F''

* translation: $(x, y) \rightarrow (x+10, y+1)$
* reflection over x-axis

(b)

Coordinates shown: $A(3.5, 4)$, $A'(3.5, 7)$, $A''(3.5, -7)$, with "presmage A", "image A''", "image A^u"
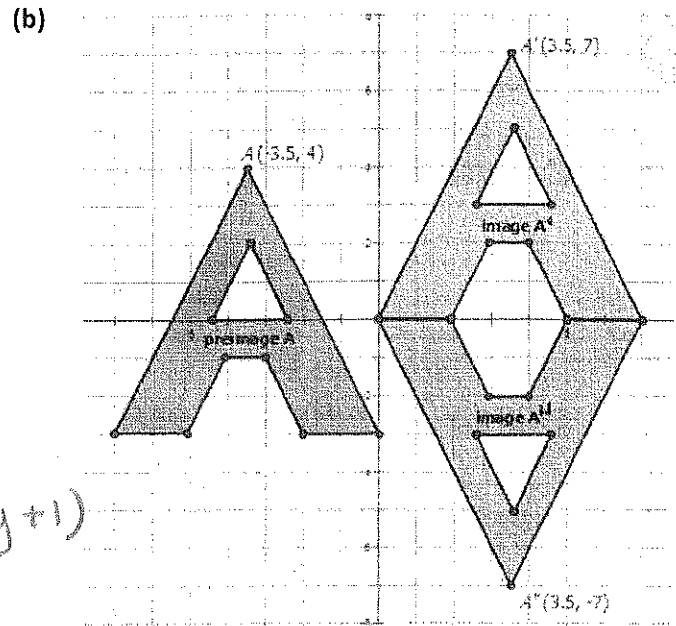
* translation: $(x, y) \rightarrow (x+7, y+3)$
* reflection over x-axis

(c)

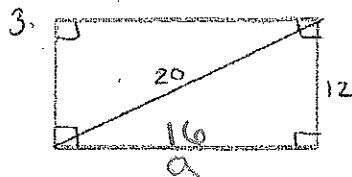Graph with points labeled U', U, G', G, B', B, E'', U'', G''
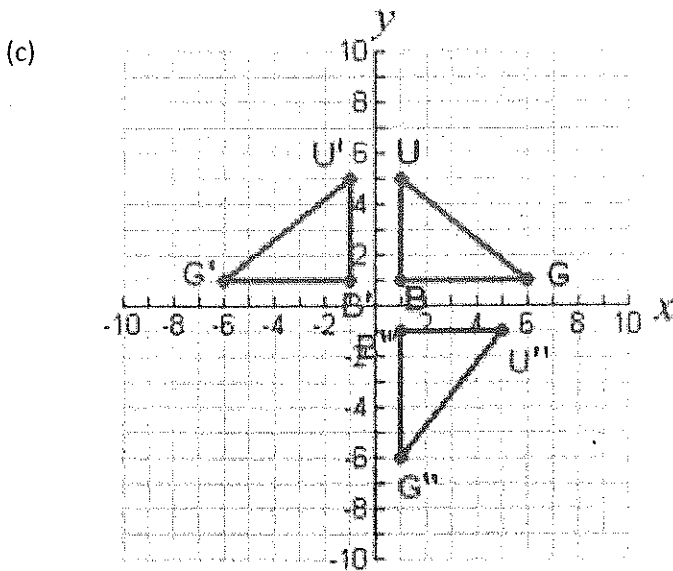
* reflection over y-axis
* reflection over y = x

Part III: Perimeter and Area

DIRECTIONS: Write an algebraic equation to find x. Then find the missing sides.

1.

Rectangle with sides $(x-6)$ ft, $11-6$, $\boxed{5 \text{ ft}}$, and 4 ft.

Area = 20 ft²

$A = b \cdot h$

$20 = 4(x-6)$

$20 = 4x - 24$

$ +24 \qquad +24$

$\dfrac{44}{4} = \dfrac{4x}{4}$

$\boxed{11 = x}$

2.

Triangle with sides: $(3x+3)$ cm, $3(23) + 2 = 71$, $(3x+2)$ cm, $(x+3)$ cm circled 26, x cm circled 23

Perimeter = 120 cm

$x + 3 + x + 3x + 2 = 120$

$5x + 5 = 120$

$ -5 \quad -5$

$5x = 115$

$\boxed{x = 23}$

DIRECTIONS: (a) Name the figure (b) Find the area

3.

20, 12, 16, a

(a) rectangle

(b) $b \cdot h$
16·12
192 units²

$a^2 + 12^2 = 20^2$
$a^2 + 144 = 400$
$a^2 = 256 \rightarrow a = 16$

4.

5 in.

(a) Square

(b) 8^2
$(5)^2$
25 in²

5.

4 m, 6 m
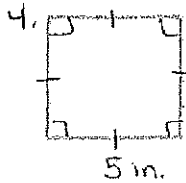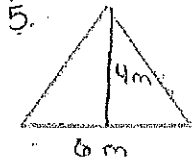
(a) triangle

(b) $\frac{1}{2}bh$
$\frac{1}{2}(6)(4)$
12 m²

6.

6, 8, 12
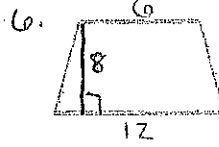
(a) trapezoid

(b) $\frac{1}{2}h(b_1 + b_2)$
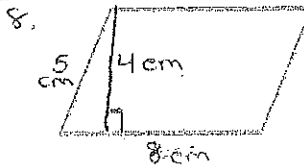$\frac{1}{2}(8)(6+12)$
$\frac{1}{2}(8)(18)$
72 units²

7.

4, 3, 3, 4
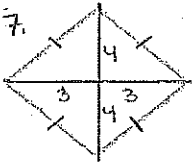
(a) rhombus
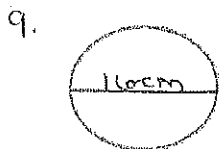
(b) $\frac{1}{2}d_1 d_2$
$\frac{1}{2}(8)(6)$
24 units²

8.

5 cm, 4 cm, 8 cm

(a) Parallelogram

(b) $b \cdot h$
8·4
32 cm²

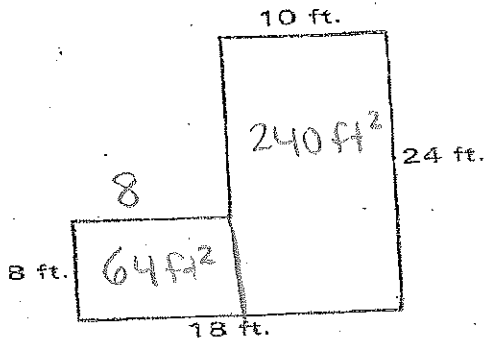**9.**

16 cm

(a) circle

(b) πr^2
$(3.14)(8)^2$
200.96 cm²

(c) Find the circumference.
$2\pi r$
$2(3.14)(8)$
50.24 cm

DIRECTIONS: Find the total area of the figure.

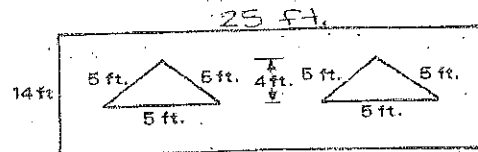**10.** What is the area of the room pictures below?

10 ft.
240 ft² 24 ft.
8
8 ft. 64 ft²
18 ft.

Total Area = 304 ft²

11. Two triangular planters sit in the rose garden. Excluding the planters, how many square feet of garden area remain?

25 ft.
14 ft, 5 ft, 5 ft, 4 ft, 5 ft, 5 ft, 5 ft, 5 ft

Rectangle – triangle – triangle
$b \cdot h$ $\frac{1}{2}bh$ $\frac{1}{2}bh$
25·14 $\frac{1}{2}(5)(4)$ $\frac{1}{2}(5)(4)$
350   –   10   –   10

330 ft²

Part IV: Word Problems

1. What is the area of a circular rose garden that measures 52 feet through the center?

$$\pi r^2$$
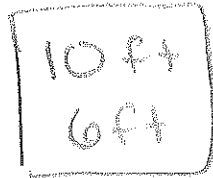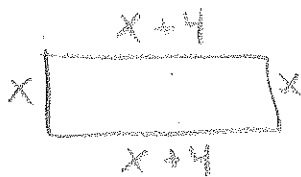$$3.14(26)^2$$
$$\boxed{2122.64 \ ft^2}$$

(circle with 52 through center)

2. The perimeter of a rectangle is 32 feet. Find the dimensions if the length is four feet longer than the width.

length = $x + 4$
width = x

(rectangle labeled $x+4$ top and bottom, x on sides)

$$\boxed{\begin{array}{c}10 \ ft \\ 6 \ ft\end{array}}$$
Answer

$$x + 4 + x + 4 + x + x = 32$$
$$4x + 8 = 32$$
$$\ -8 \quad -8$$
$$\frac{4x}{4} = \frac{24}{4}$$
$$x = 6$$

3. Mary bought an 18 inch large pizza.

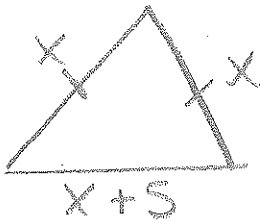(A) How many inches of crust is there?

Circumference
$2\pi r$

$$2(3.14)(9)$$
$$\boxed{56.52 \ inches}$$

(B) A pizza pie is always cut into 8 slices. How many inches of crust is there on each slice?

$$\frac{56.52}{8}$$
$$\boxed{7.065 \ in}$$

4. A triangle has a perimeter of 50. If two of its sides are equal and the third side is five more than the equal sides, what is the length of the third side?

(triangle labeled x, x, and $x+5$)

$$x + x + x + 5 = 50$$
$$3x + 5 = 50$$
$$3x = 45$$
$$x = 15$$

$$\boxed{\text{The third side is 20 units}}$$