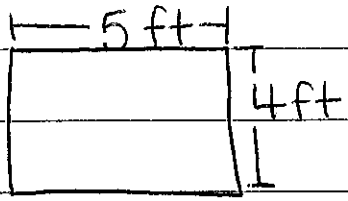
Topic 12-1 Area of Rectangles

★ Area - the amount of surface a figure covers.

★ Formula:

Area = l • w, l × w, or length × width

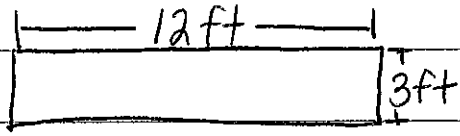
1. 

$A = l \times w$

$A = 5 \times 4$

$\boxed{A = 20\ ft^2}$

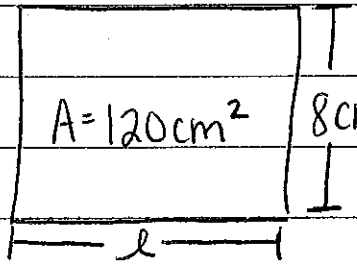
"20 square feet"

2. 

$A = l \times w$

$A = 12 \times 3$

$\boxed{A = 36\ ft^2}$

3. 

$A = l \times w$

$120 = l \times 8$

$\div 8 \quad \div 8$ ★ Inverse Operation

$120 \div 8 = l$

$\boxed{15\ cm = l}$

$$8\overline{)120}$$

$-8\downarrow$

40

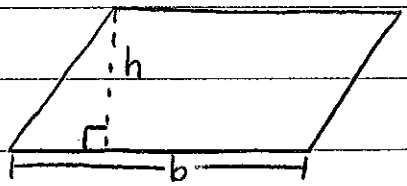
-40

0

15

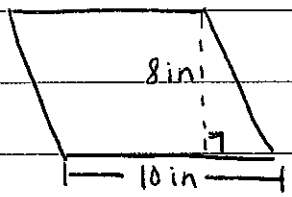
Topic 12-2 Area of Parallelograms and Rhombuses

★ **Formula:**

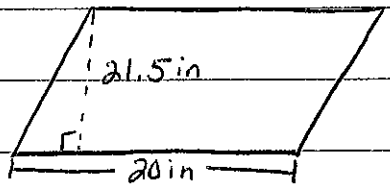


h = height
b = base

Area = base × height, $b \times h$, or $b \cdot h$

1. 

$A = b \times h$
$A = 10 \times 8$
$\boxed{A = 80 \text{ in}^2}$

2. 

$A = b \times h$
$A = 20 \times 21.5$
$\boxed{A = 430 \text{ in}^2}$

$$\begin{array}{r} {}^{1}21.5\ (1) \\ \times\ 20\ (0) \\ \hline 000 \\ +4300 \\ \hline 430.0\ (1) \end{array}$$

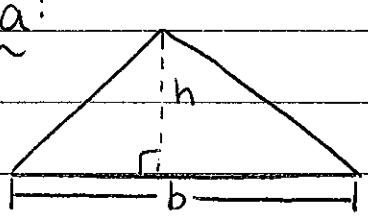
3. Parallelogram: $b = 27$ ft; $h = 32$ ft $A = ?$

$A = b \times h$
$A = 27 \times 32$
$\boxed{A = 864 \text{ ft}^2}$

$$\begin{array}{r} {}^{2}\ {}^{1}27 \\ \times\ 32 \\ \hline 54 \\ +810 \\ \hline 864 \end{array}$$

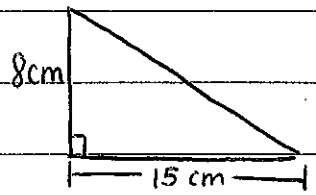
Topic 12-3 Area of Triangles

★ Formula:



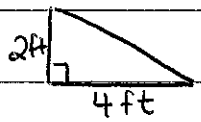
h = height
b = base

Area = $\frac{1}{2}$ × base × height, $\frac{1}{2}b \times h$, or $\frac{1}{2}bh$

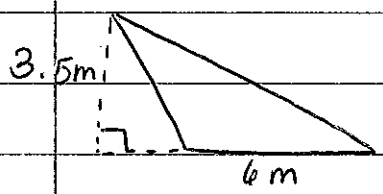
1. 

$A = \frac{1}{2}bh$
$A = \frac{1}{2} \times 15 \times 8$
$A = 7.5 \times 8$
$A = 60\,cm^2$

$$\begin{array}{r} {}^{4}7.5 \\ \times\ 8 \\ \hline 60.0 \end{array}$$

2. 

$A = \frac{1}{2}bh$
$A = \frac{1}{2} \times 4 \times 2$
$A = 2 \times 2$
$A = 4\,ft^2$

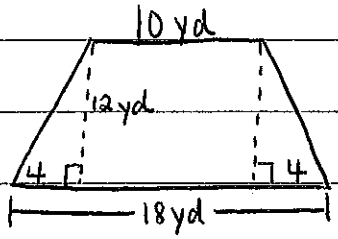
3. 

$A = \frac{1}{2}bh$
$A = \frac{1}{2} \times 6 \times 5$
$A = 3 \times 5$
$A = 15\,m^2$

Topic 12-4 Area of Special Quadrilaterals

★ **Trapezoid** - a quadrilateral that has only one pair of opposite sides that are parallel

★ **Kite** - a quadrilateral with 2 pairs of adjacent sides that are equal in length.

1. 

★ Divide the trapezoid into 2 triangles + 1 rectangle

Triangles: $A = \frac{1}{2}bh$

$A = \frac{1}{2} \times 4 \times 12$

$A = 2 \times 12$

$A = 24$

$+ 24$

48 There are 2 triangles

Rectangle:

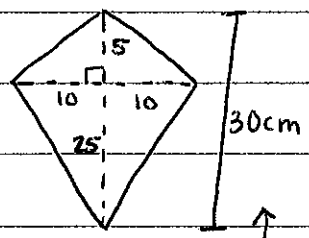
$A = l \times w$

$A = 12 \times 10$

$A = 120$

$120 + 48$

$168\ yd^2$

2. 

★ Divide the Kite into 2 triangles

$b = 25 + 5 = 30$

$h = 10$

Triangles: $A = \frac{1}{2}bh$

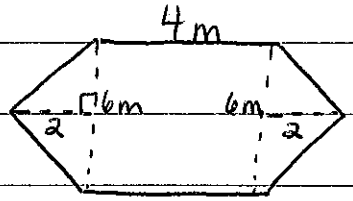
$A = \frac{1}{2} \times 30 \times 10$

$A = 15 \times 10$

$A = 150 \times 2$ There are 2 triangles

$A = 300cm^2$

Topic 12-5 Finding Areas of Polygons

1. 

Step 1: Divide the polygon into parts.

Step 2: Find the area of each part.

Step 3: Combine (Add) the areas together.

Triangles: $A = \frac{1}{2}bh$

$A = \frac{1}{2} \times 6 \times 2$

$A = 3 \times 2$

$A = 6 \times 2$ There are 2 triangles.

$A = (12)$

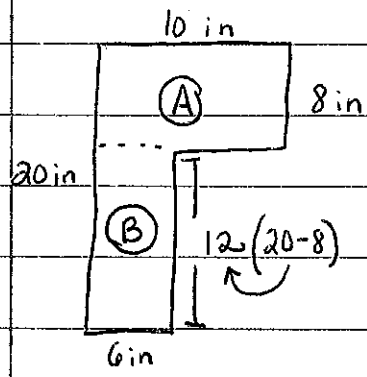
Rectangle: $A = l \times w$

$A = 6 \times 4$

$A = (24)$

Combine: $12 + 24$

$36 m^2$

2. 

Rectangle (A)

$A = l \times w$

$A = 10 \times 8$

$A = (80)$

Rectangle (B) $A = l \times w$

$A = 6 \times 12$

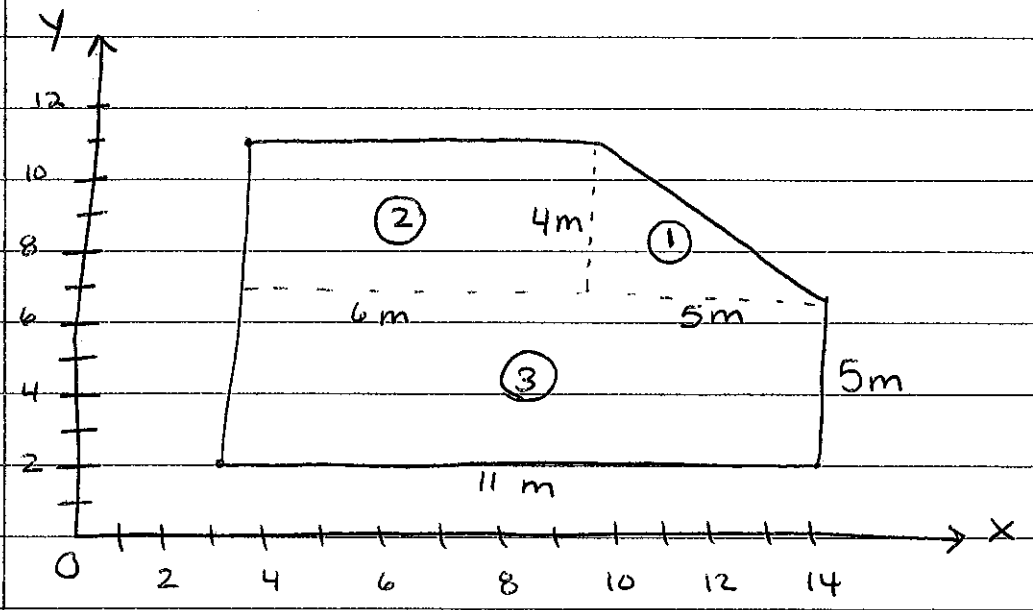
$A = (72)$

Combine: $80 + 72 = 152$

$A = 152 in^2$

Topic 12-6 Areas of Polygons on the Coordinate Plane

1.



Triangle ①: $A = \frac{1}{2}bh$

$A = \frac{1}{2} \times 5 \times 4$

$A = 2.5 \times 4$

$A = 10$

Rectangle ②: $A = l \times w$

$A = 6 \times 4$

$A = 24$

Rectangle ③: $A = l \times w$

$A = 11 \times 5$

$A = 55$

Combine:

$10 + 24 + 55 = 89$

$A = 89 m^2$

Topic 12-7 Problem Solving: Use Objects

★ A <u>pentomino</u> is an arrangement of (5) identical squares, each having a common side with at least one other square. There are (12) possible pentominoes.