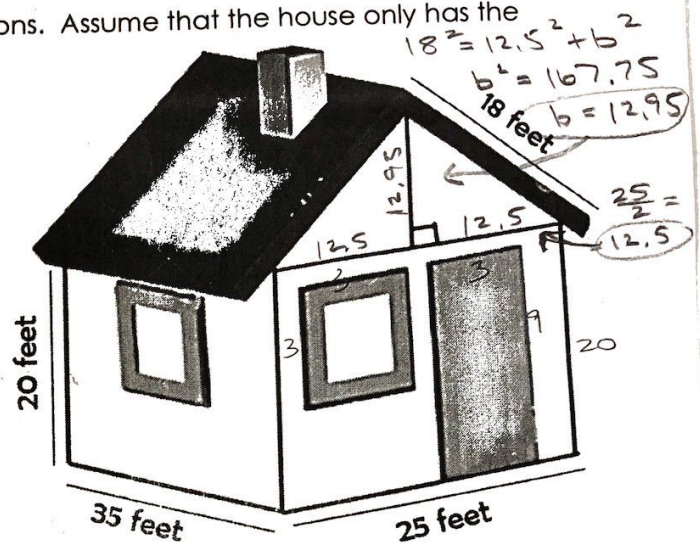


Use the following house diagram to answer the questions. Assume that the house only has the one door and two windows that are visible.

- *The doors dimensions are 3 feet x 9 feet.
- *Both of the window dimensions are 3 feet x 3 feet.



1. What is the total area of both of the windows?

$(3)(3) = 9$
2 windows = $9 + 9 = 18 \text{ ft}^2$

2. What is the area of the door?

$(3)(9) = 27 \text{ ft}^2$

3. What is the area of the walls (all 4 sides) EXCLUDING the windows and door?

See next page for answer

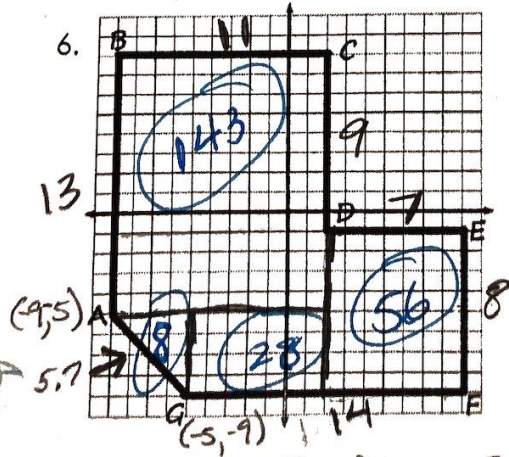
4. You want to paint the house yellow. The paint you like is \$4.15 per square foot. How much will you need to spend on paint?

$(2678.8)(4.15) = \$11,117.02$

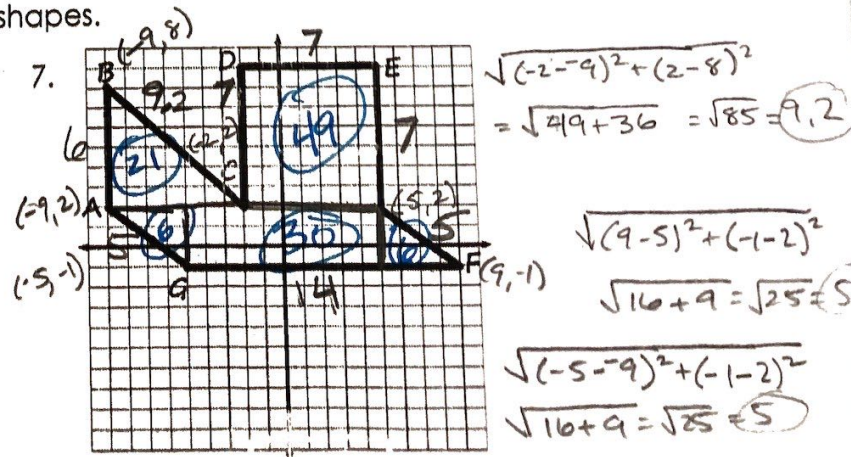
5. What is the area of the roof [ignore the chimney]? If shingles cost \$17.25 a square foot, how much will you spend to reshingle the house?

$(18)(35) = 630$ 2 sides of roof = $630 + 630 = 1260$
 $(1260)(17.25) = \$21,735$

Find the perimeter and area of the following shapes.



Perimeter: 67.7 units Area: 235 units²



Perimeter: 60.2 units Area: 112 units²

$(-5-9)^2 + (-9-5)^2 = \sqrt{16+16} = \sqrt{32} = 5.7$

$$\begin{array}{l} 3 \text{ Walls } (20)(35) = 700 \times 2 = 1400 \\ (20)(25) = 500 \times 2 = 1000 \end{array} \left. \vphantom{\begin{array}{l} 3 \text{ Walls } \\ (20)(35) = 700 \times 2 = 1400 \\ (20)(25) = 500 \times 2 = 1000 \end{array}} \right\} \begin{array}{l} \text{total} \\ 2400 \end{array}$$

Triangular area of attic wall

$$\frac{1}{2}(25)(12.95) = 161.9 \times 2 = 323.8$$

Area of 2 windows + door

$$18 + 27 = 45$$

Area of walls + Area of attic walls - windows/doors

$$2400 + 323.8 - 45$$

$$= \boxed{2678.8 \text{ ft}^2}$$

Formula for partitioning segments: $(x_1 + \frac{a}{a+b}(x_2 - x_1), y_1 + \frac{a}{a+b}(y_2 - y_1))$

8. Find the point T so that the directed line segment from A(1,2) to B(3,9) is partitioned into a ratio of 2:3. $\rightarrow \frac{2}{5}$

$$(1 + \frac{2}{5}(3-1), 2 + \frac{2}{5}(9-2)) = \boxed{(1.8, 4.8)}$$

9. Find the point T so that the directed line segment from A(-2, 5) to B(4,-1) is partitioned into a ratio of 1:4. $\rightarrow \frac{1}{5}$

$$(-2 + \frac{1}{5}(4-(-2)), 5 + \frac{1}{5}(-1-5)) = \boxed{(-.8, 3.8)}$$

10. The point T is located three-fourths the distance from A(0, 4) to B(-1,-1). Find the point T.

$$(0 + \frac{3}{4}(-1-0), 4 + \frac{3}{4}(-1-4)) = \boxed{(-.75, .25)} \quad \boxed{(-.8, .3)}$$

11. Find the coordinates of T that partition A(-9,5) to B(3,-1) into a 4:5 ratio. $\rightarrow \frac{4}{9}$

$$(-9 + \frac{4}{9}(3-(-9)), 5 + \frac{4}{9}(-1-5)) = \boxed{(-3.7, 2.3)}$$

12. Find the coordinates of T that partition A(9, -10) to B(1,0) into a 5:2 ratio. $\rightarrow \frac{5}{7}$

$$(9 + \frac{5}{7}(1-9), -10 + \frac{5}{7}(0-(-10))) = \boxed{(3.3, -2.9)}$$

13. A great steakhouse is $\frac{4}{5}$ of the way from Kaleb's to Dave's Doorknobs. Where is it?

$$(18, 4) \quad (12, 14)$$

$x_1 \quad y_1 \quad x_2 \quad y_2$

$$(18 + \frac{4}{5}(12-18), 4 + \frac{4}{5}(14-4)) = \boxed{(13.2, 12)}$$

14. The bowling alley is located $\frac{1}{2}$ of the way from Malik's to Kaleb's. How far will Bill have to travel to join them?

Malik = (3, 1) } use midpoint formula
 Kaleb = (18, 4) } $(\frac{3+18}{2}, \frac{1+4}{2}) = (10.5, 2.5)$

② Use distance formula from Bill to Bowling Alley

Bill (10, 6)

$$\sqrt{(10.5-10)^2 + (2.5-6)^2} = \sqrt{.25 + 12.25} = \sqrt{12.5} = \boxed{3.5 \text{ miles}}$$

