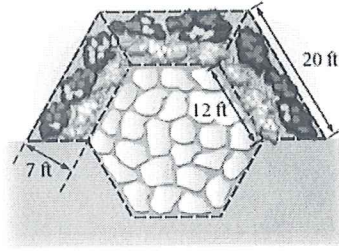## Advanced Area Application In Class Practice

1. Alana, a landscape architect is designing three trapezoidal flowerbeds to wrap around the three sides of a hexagonal patio. What is the area of the entire flowerbed? Alana's fee is $100 plus $5 per square foot. What will the flowerbed and labor cost (without tax)?
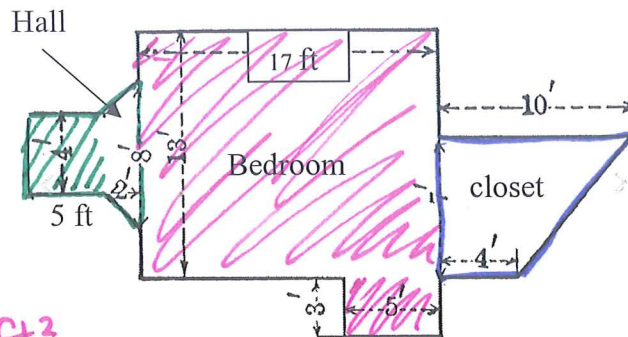

20 ft
12 ft
7 ft

$$\tfrac{1}{2}(h)(b_1 + b_2)$$

$$A = 3\left(\tfrac{1}{2}\right)(7)(12+20)$$

$$A = 336 \text{ ft}^2$$

$$\text{cost}: (336)(5) = 1680 + \$100 \text{ fee} = \boxed{\$1780}$$

2. Kyle wants to re-carpet his bedroom, closet and hallway. Find the total square footage which needs to be carpeted. The carpet costs $10 per square YARD. How much will carpeting subtotal cost Kyle? How much will the tax cost? How much will the total be for this project?

Hall
17 ft
10'
Bedroom
closet
5 ft
4'
5'

Bedroom: $(13)(17) + (3)(5)$
   $221 + 15 = 236 \text{ ft}^2$

Closet: $\tfrac{1}{2}(7)(10+4) = 49 \text{ ft}^2$

Hallway: $(5)(4) + \tfrac{1}{2}(2)(4+8)$
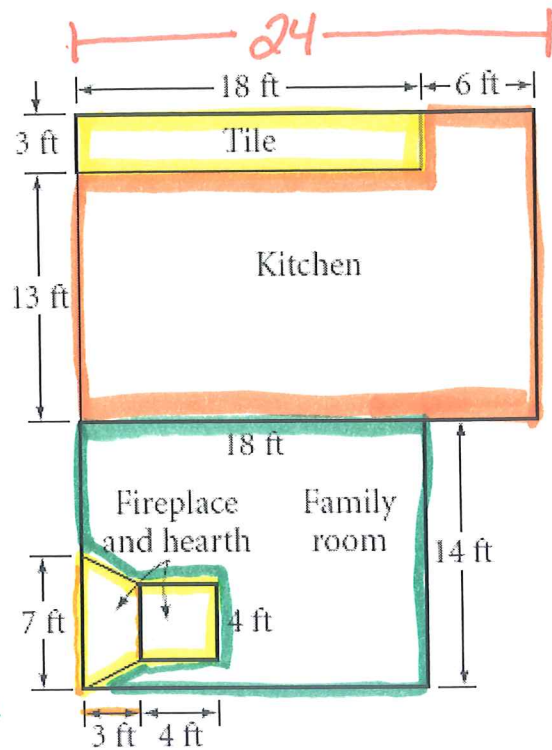 $20 + 12 = 32 \text{ ft}^2$

Total area: 317 ft^2

Total area in yds^2 = $\frac{317}{9} = 35.2 \text{ yd}^2$

Subtotal: $(35.2)(10) = \$352$

Tax: $(352)(.06) = \$21.12$

Total: $352 + 21.12 = \boxed{\$373.12}$

3. Shelbie will be tiling the area labled tile, the fireplace and hearth. She will be putting new carpet down in the family room and hardwood floors in the kitchen. She only has $5,000 for her renovation budget. (a) Find how many square feet of each material is needed for this home renovation. (b) If the wood flooring cost $10 per square foot, the tile costs $3 per square foot and carpet costs $3.30 per square foot, does Shelbie have enough money for her home renovation (including tax)?

Diagram labels:
- 24 (top)
- 18 ft, 6 ft
- 3 ft
- Tile
- Kitchen
- 13 ft
- 18 ft
- Fireplace and hearth
- Family room
- 14 ft
- 7 ft
- 4 ft
- 3 ft, 4 ft

a) Tile: $(18)(3) + \frac{1}{2}(3)(7+4) + (4)(4)$

$= 54 + 16.5 + 16$

$= 86.5 \text{ ft}^2$

Carpet $= (18)(14) - 32.5$ ← fireplace + hearth

$= 252 - 32.5$

$= 219.5 \text{ ft}^2$

Hardwood: $(16)(24) - 54 = 330 \text{ ft}^2$ ← tile

b) $(86.5)(3) = \$259.50$

$(219.5)(3.30) = \$724.35$

$(330)(10) = \$3300$

Subtotal: $\$4283.85$

Tax: $(4283.85)(.06) = \$257.01$

Total: $\$4540.86$

Shelbie has enough for the renovation, but cannot spend more than $460 on labor.