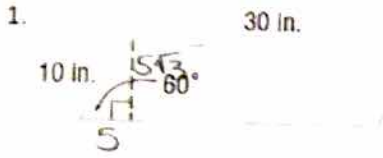


# Area Test Review!!!

Show all work and attempt all questions for credit!

$$\sqrt{x} \cdot \sqrt{x} = x$$

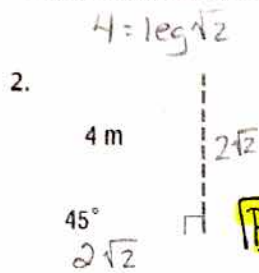
Find the **perimeter** and **area** of each parallelogram. Keep answer in exact simplest form- simplify all radicals.



$$A = (30)(5\sqrt{3})$$

$$A = 150\sqrt{3} \text{ in}^2$$

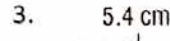
$$P = 80 \text{ in}$$



$$P = 8 + 4\sqrt{2} \text{ in.}$$

$$A = (2\sqrt{2})(2\sqrt{2}) = 4 \cdot 2$$

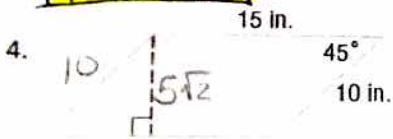
$$A = 8 \text{ m}^2$$



$$P = 21.6 \text{ cm}$$

$$A = (5.4)(5.4)$$

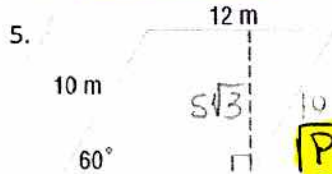
$$A = 29.16 \text{ cm}^2$$



$$A = (15)(5\sqrt{2})$$

$$A = 75\sqrt{2} \text{ in}^2$$

$$P = 50 \text{ in.}$$



$$P = 44 \text{ m}$$

$$A = (12)(5\sqrt{3})$$

$$A = 60\sqrt{3} \text{ m}^2$$

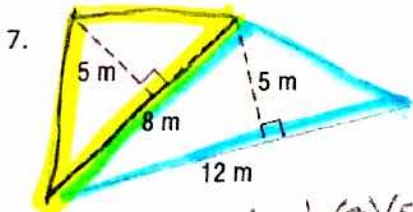


$$P = 19.2 \text{ ft}$$

$$A = (4.2)(5.4)$$

$$A = 22.68 \text{ ft}^2$$

Find the **area** of each figure. Round to the nearest tenth if necessary.



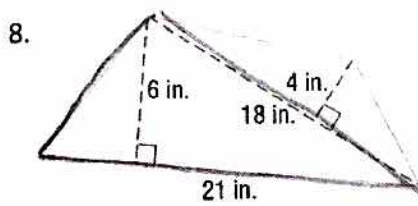
$$A = \frac{1}{2}(12)(5)$$

$$A = 30 \text{ m}^2$$

$$A = \frac{1}{2}(8)(5)$$

$$A = 20 \text{ m}^2$$

$$A = 30 + 20 = 50 \text{ m}^2$$



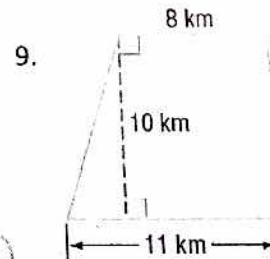
$$A = \frac{1}{2}(21)(6)$$

$$A = 63 \text{ in}^2$$

$$A = \frac{1}{2}(18)(4)$$

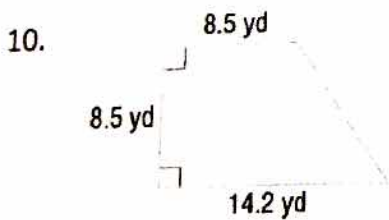
$$A = 36 \text{ in}^2$$

$$A = 63 + 36 = 99 \text{ in}^2$$



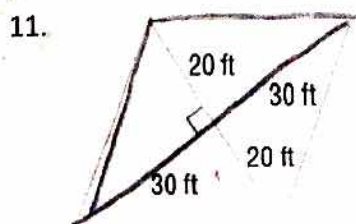
$$A = \frac{1}{2}(8+11)(10)$$

$$A = 95 \text{ km}^2$$



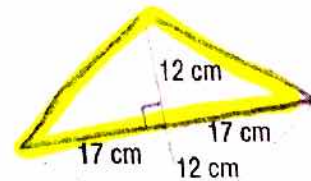
$$A = \frac{1}{2}(8.5)(14.2+8.5)$$

$$A = 96.5 \text{ yd}^2$$



$$A = 2\left(\frac{1}{2}(60)(20)\right)$$

$$A = 1200 \text{ ft}^2$$

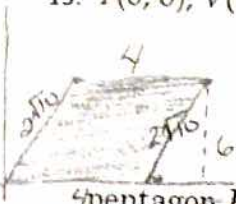


$$A = 2\left(\frac{1}{2}(34)(12)\right)$$

$$A = 408 \text{ cm}^2$$

Given the coordinates of the vertices, determine whether the figure is a square, a rectangle, or a parallelogram. Then find the perimeter and area of TVXY.

13.  $T(0, 0), V(2, 6), X(6, 6), Y(4, 0)$



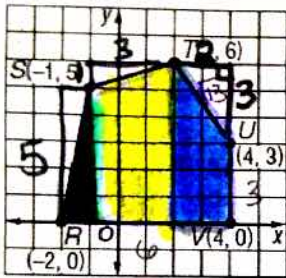
Parallelogram  
 $A = (4)(6) = 24 \text{ units}^2$   
 $P = 8 + 4\sqrt{10} \text{ units}$

14.  $T(10, 16), V(2, 18), X(-3, -2), Y(5, -4)$



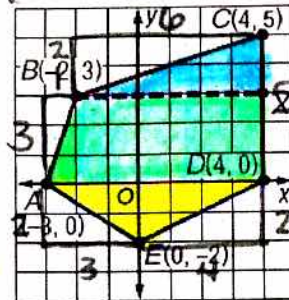
Parallelogram  
 $A = 5\sqrt{17} \cdot 2\sqrt{17} = 170 \text{ units}^2$   
 $P = 14\sqrt{17} \text{ units}$

15. pentagon RSTUV



$2^2 + 3^2 = x^2$      $12 + 3^2 = x^2$   
 $4 + 9 = x^2$      $1 + 9 = x^2$   
 $x = \sqrt{13}$      $x = \sqrt{10}$   
 $12 + 5^2 = x^2$   
 $x = \sqrt{26}$   
 $P = 3 + 6 + \sqrt{13} + \sqrt{10} + \sqrt{26}$   
 $P = 20.9 \text{ units}$

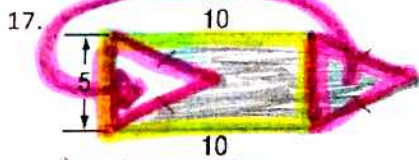
$A = \frac{1}{2}(1)(5) + \frac{1}{2}(3)(5+6) + \frac{1}{2}(2)(3+6)$   
 $A = 2.5 + 16.5 + 9$   
 $A = 28 \text{ units}^2$



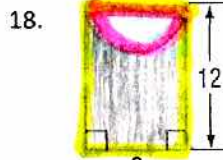
$2^2 + 6^2 = x^2$      $3^2 + 1^2 = x^2$   
 $x = 2\sqrt{10}$      $x = \sqrt{10}$   
 $2^2 + 3^2 = x^2$      $4^2 + 2^2 = x^2$   
 $x = \sqrt{13}$      $x = 2\sqrt{5}$   
 $P = 2\sqrt{10} + \sqrt{10} + \sqrt{13} + 2\sqrt{5} + 5$   
 $P = 22.6 \text{ units}$

$A = \frac{1}{2}(6)(2) + \frac{1}{2}(3)(6+7) + \frac{1}{2}(1)(2)$   
 $A = 6 + 19.5 + 7$   
 $A = 32.5 \text{ units}^2$

Find the area of each figure or shaded region. Round to the nearest tenth if necessary.

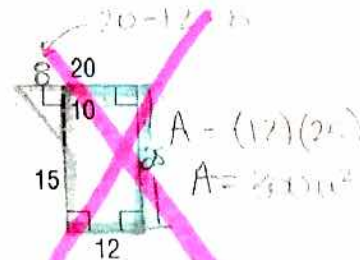


$A = (10)(5)$   
 $A = 50 \text{ units}^2$

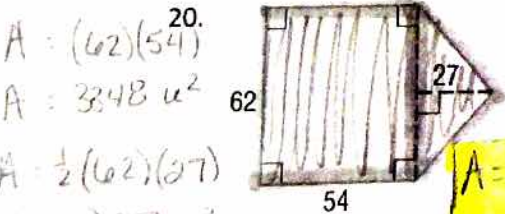


$A = b \cdot h - \pi r^2$   
 $A = (8)(12) - \pi(4)^2$   
 $A = 96 - \frac{16\pi}{2}$

$A = 45.7 \text{ units}^2$

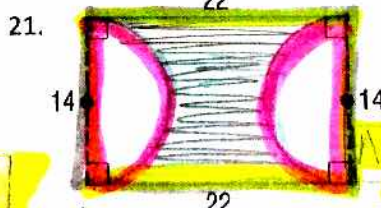


$A = \frac{1}{2}(12)(8) + (12)(15)$   
 $A = 40 + 180$   
 $A = 220 \text{ units}^2$



$A = (62)(54)$   
 $A = 3348 \text{ u}^2$   
 $A = \frac{1}{2}(62)(27)$   
 $A = 837 \text{ u}^2$   
 $A = 3348 + 837$

$A = 4185 \text{ units}^2$

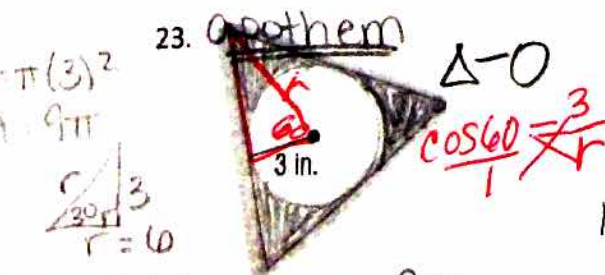


$A = (22)(14) - \pi(7)^2$   
 $A = 308 - 49\pi$

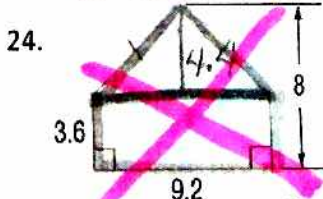
$A = 157.1 \text{ units}^2$



$A = \pi(2.4)^2 - \frac{1}{2} \cdot (3.0)^2 \cdot \sin 120$   
 $A \approx 3.6 \text{ cm}^2$



$A = \pi(6)^2 - \pi(3)^2$   
 $A = 9\pi$   
 $A = 3(\frac{1}{2})(6)^2 \sin 120 - 9\pi$   
 $A = 18.5 \text{ units}^2$



$A = \frac{1}{2}(3.6)(4.4) + (9.2)(8)$   
 $A = 20.2 + 73.6$   
 $A = 93.8 \text{ units}^2$



$A = (32)(16) - \frac{1}{2}\pi(8)^2$   
 $A = 512 - 32\pi$   
 $A = 512 + 32\pi$   
 $A = 612.5 \text{ units}^2$

Find the area of each REGULAR polygon. Simplify each answer- simplify radicals!!!!!!

$$\frac{84\sqrt{2}}{4} = 21\sqrt{2}$$

26. Octagon with P = 72in. side = 9in

$$\frac{\sin 45}{9} = \frac{\sin 67.5}{r}$$

$$r = 11.8$$

$$A = 8 \left(\frac{1}{2}\right) (11.8)(11.8) \sin 45$$

$$A \approx 393.8 \text{ in}^2$$

27. Square with P =  $84\sqrt{2} \text{ m}$  side =  $21\sqrt{2} \text{ m}$

$$45-45-90: r = 21$$

$$A = 4 \left(\frac{1}{2}\right) (21)(21) \sin 90$$

$$A \approx 882 \text{ m}^2$$

28. Square with apothem = 12 in.

$$r = 12\sqrt{2}$$

$$A = 4 \left(\frac{1}{2}\right) (12\sqrt{2})(12\sqrt{2}) \sin 90$$

$$A \approx 576 \text{ in}^2$$

29. Hexagon with apothem = 24 cm

$$r = 16\sqrt{3} \approx 27.7$$

$$A = 6 \left(\frac{1}{2}\right) (27.7)^2 \sin 60$$

$$A \approx 1995.3 \text{ cm}^2$$

30. Triangle with side length = 15.5 in.

$$A = \frac{1}{2} (15.5)^2 \sin 60$$

$$A \approx 104 \text{ in}^2$$

31. Octagon with side length = 10 km.

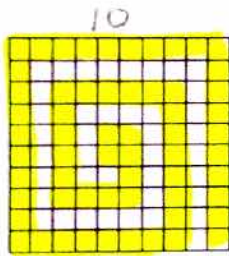
$$r = 13.1$$

$$A = 8 \left(\frac{1}{2}\right) (13.1)^2 \sin 45$$

$$A \approx 485.4 \text{ km}^2$$

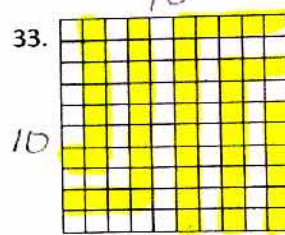
Find the probability that a point chosen at random lies in the shaded region.

32.



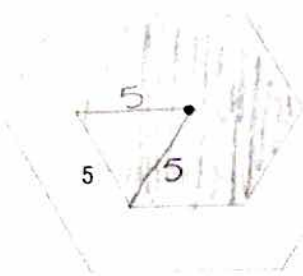
$$\frac{\text{Shaded}}{\text{total}} = \frac{60}{100} = 60\%$$

33.



$$\frac{50}{100} = 50\%$$

34.



Shaded: equilateral  
side = 5

$$A = 6 \left(\frac{1}{2}\right) (5)^2 \sin 60$$

$$A \approx 65.0 \text{ u}^2$$

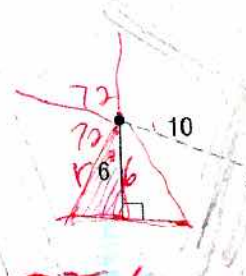
total: equilateral  $\Delta$ 's  
 $r = 8$

$$A = 6 \left(\frac{1}{2}\right) (8)^2 \sin 60$$

$$A = 166.3 \text{ u}^2$$

$$\frac{65}{166.3} = 39\%$$

35.



Shaded: big - little  
 $A = 5 \left(\frac{1}{2}\right) (10)^2 \sin 60$

$$A = 365.6$$

$$A = 381.9$$

$$- 171.2$$

$$130.$$

$$A \approx 235.6$$

$$\text{Total: } 381.9$$

$$\frac{235.6}{381.9} = 62\%$$

36. **FIND THE ERROR** Rachel and Taimi are finding the probability that a point chosen at random lies in the green region. Who is correct? Explain your answer.

Rachel

$$A = \frac{N}{360} \pi r^2$$

$$= \frac{59 + 62}{360} \pi (5^2)$$

$$\approx 26.4$$

$$P(\text{green}) \approx \frac{26.4}{25\pi} \approx 0.34$$

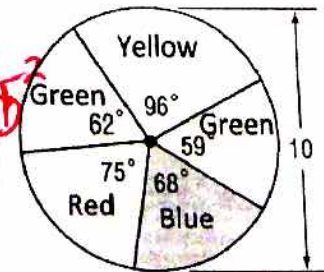
Taimi

$$A = \frac{N}{360} \pi r^2$$

$$= \frac{59}{360} \pi (5^2) + \frac{62}{360}$$

$$\approx 13.0$$

$$P(\text{green}) \approx \frac{13.0}{25\pi} \approx 0.17$$



Rachel because you must add Green region together before dividing by 360 + multiplying by area of circle

Find the area of the indicated sector. Then find the probability of spinning the color indicated if the diameter of each spinner is 6 inches.

*Shaded Total*  
 $r=3$

37. Red

Sector:  $\frac{80}{360} \cdot \pi(3)^2 = 6.28 \text{ in}^2$

Total:  $9\pi = 28.3$

Probability:  $\frac{6.3}{28.3} = .223$

$= 22.3\%$

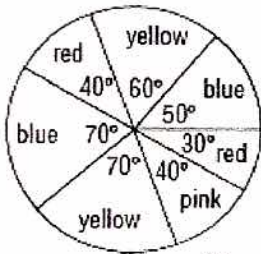
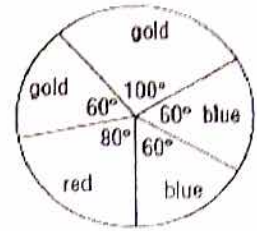
38. Gold

Shaded:  $\frac{160}{360} \cdot 9\pi = 12.6$

Total:  $9\pi = 28.3$

Probability:  $\frac{12.6}{28.3} = .445$

$= 44.5\%$



39. Yellow

$\frac{130}{360} \cdot 9\pi = 10.2$

Total =  $9\pi = 28.3$

Prob.:  $\frac{10.2}{28.3} = .360$   
 $= 36\%$

40. Blue

$\frac{120}{360} \cdot 9\pi = 9.4$

Prob:  $\frac{9.4}{28.3} = .332$

$= 33.2\%$

41. Pink

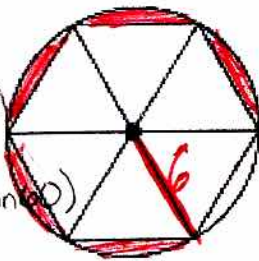
$\frac{40}{360} \cdot 9\pi = 3.14$

Prob =  $\frac{3.1}{28.3}$

$= .110$   
 $= 11\%$

Shaded

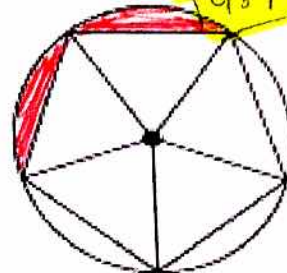
$\frac{5}{6} (0 - \text{hexagon})$   
 $\frac{5}{6} (\pi(6)^2 - 6 \cdot \frac{1}{2} \cdot 6^2 \sin(60))$   
 $= 16.3 \text{ units}^2$



Total =  $36\pi = 113.1 \text{ u}^2$

Prob:  $\frac{16.3}{113.1} = .144$

$14.4\%$



$\frac{2}{5} (0 - \text{pentagon})$   
 $\frac{2}{5} (16\pi - 5 \cdot \frac{1}{2} \cdot 4^2 \sin(72))$   
 $A = 4.9 \text{ units}^2$   
 Total =  $16\pi = 50.3$   
 Prob:  $\frac{4.9}{50.3} = .097$

$9.7\%$

Find the area of each circle given the circumference. Leave in terms of  $\pi$ , THEN use 3.14 to find the decimal form.

$C = 2\pi r$

44.  $34\pi$

$C = 34\pi$

$\frac{34\pi}{2\pi} = \frac{2\pi r}{2\pi}$

$r = 17$

$A = \pi(17)^2 =$

$A = 289\pi \text{ units}^2$

$A = (289)(3.14)$

$A = 907.5 \text{ units}^2$

45.  $17\pi$

$17\pi = 2\pi r$

$r = 8.5$

$A = \pi(8.5)^2$

$A = 72.25\pi \text{ u}^2$

$A = (72.25)(3.14)$

$A = 226.9 \text{ u}^2$

46. 54.8

$54.8 = 2\pi r$

$r = 8.72$

$A = \pi(8.72)^2$

$A = 76\pi \text{ units}^2$

$A = (76)(3.14)$

$A = 238.8 \text{ units}^2$

47. 91.4

$91.4 = 2\pi r$   $r = 14.5$

$A = \pi(14.5)^2$

$A = 210.25\pi \text{ units}^2$

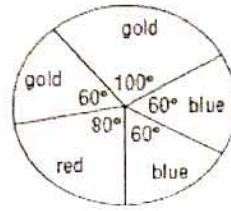
$A = (210.25)(3.14)$

$A = 660.2 \text{ units}^2$

Find the area of the indicated sector. Then find the probability of spinning the color indicated if the diameter of each spinner is 6 inches.

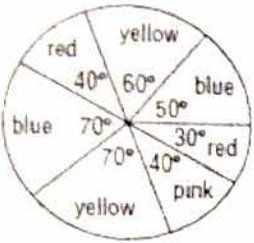
34. Red

35. Gold



Use for problems

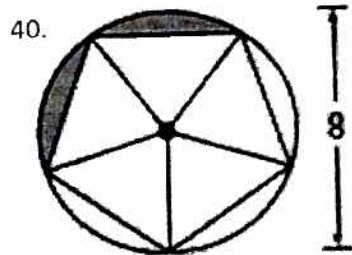
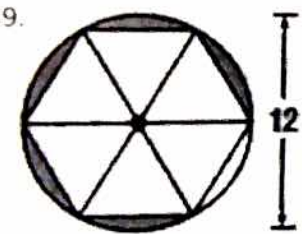
#34 & 35



36. Yellow

37. Blue

38. Pink



Find the area of each circle given the circumference. Leave in terms of  $\pi$ , THEN use 3.14 to find the decimal form.

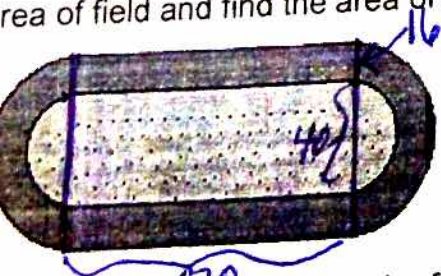
41.  $34\pi$

42.  $17\pi$

43. 54.8

44. 91.4

5. A running track is shaped like a rectangle with a semicircle on each of the shorter sides. The width across the field is 40 feet and the length is 3 times the width. The width of the track is 16 ft across. Find the area of field and find the area of the track. Round each answer to the nearest hundredth.

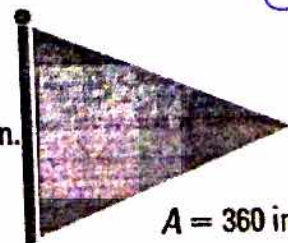


$$\begin{aligned}
 & \text{Bigger} - \text{small} \\
 & (\sqrt{120^2 + 36^2}) - (\sqrt{40^2 + 36^2}) \\
 & (120.72 + \pi \cdot 36^2) - (120.40 + \pi \cdot 20^2) \\
 & 12,709.4 - 6056 = 6653.4 \text{ ft}^2
 \end{aligned}$$

5. You are making a triangular flag with a base of 24 inches and an area of 360 square inches. How long should the flag be?

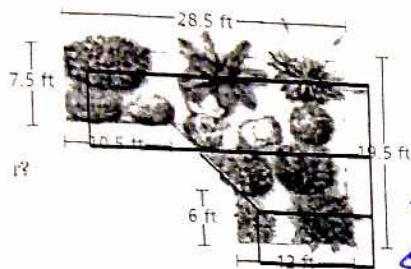
$$\begin{aligned}
 A &= \frac{1}{2} \cdot b \cdot h \\
 360 &= \frac{1}{2} \cdot 24 \cdot h
 \end{aligned}$$

$$\boxed{h = 30 \text{ in}}$$



$A = 360 \text{ in.}^2$

47. Katie is using the given plan to convert part of her lawn to a xeriscape garden. A newly planted xeriscape uses 17 gallons of water per square foot per year. (a) Find the area of her garden (round to the nearest hundredth). (b) How much water will the garden require in one year? (c) The lawn that Katie is replacing requires 79 gallons of water per square foot per year. How much water will Katie save by planting the xeriscape garden per year?



$$\leftarrow 28.5(7.5) = 213.75$$

$$\leftarrow \frac{1}{2}(12+18)6 = 90$$

$$\leftarrow 12(6) = 72$$

$$\underline{\underline{375.75}}$$

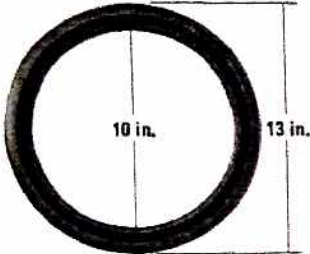
(a) 375.75 ft<sup>2</sup>

(b) 6387.75 gal

x 17  
x 79 then subtract

(c) 23,296.5 gal

48. A plastic flying disc is circular and has a circular hole in the middle. If the diameter of the outer edge of the ring is 13 inches and the diameter of the inner edge of the ring is 10 inches, what is the exact area of the plastic ring?



$$\pi(6.5)^2 - \pi(5)^2$$

$$= 54.2 \text{ in}^2$$

49. You have a part-time job at a school. You need to buy enough grass seed to cover the school's soccer field. The field is 50 yards wide and 100 yards long. The instructions on the seed bags say that one bag will cover 5,000 square feet. How many bags do you need?

$$A = 5000 \text{ yd}^2 \quad 50 \text{ yd}$$

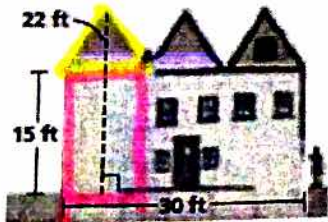
$$100 \text{ yd}$$

convert to ft<sup>2</sup>

$$5000 \text{ yd}^2 \rightarrow 45,000 \text{ ft}^2$$

9 bags

50. Robert and Jarod are painting a stage backdrop for a play. The paint they are using covers 90 square feet per quart. How many quarts of paint should they buy to paint the figure below?



$$(15 \cdot 10) 3 = 450$$

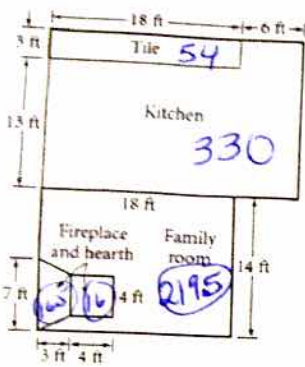
$$\left(\frac{1}{2} \cdot 10 \cdot 7\right) 3 = 105$$

$$\underline{\underline{555 \text{ ft}^2}} \div 90 = 6.2 \text{ qts}$$

7 Quarts

51. skip

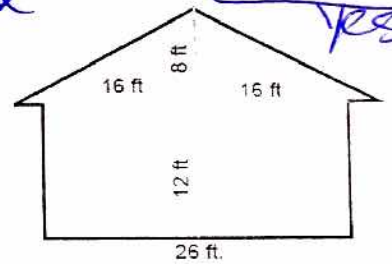
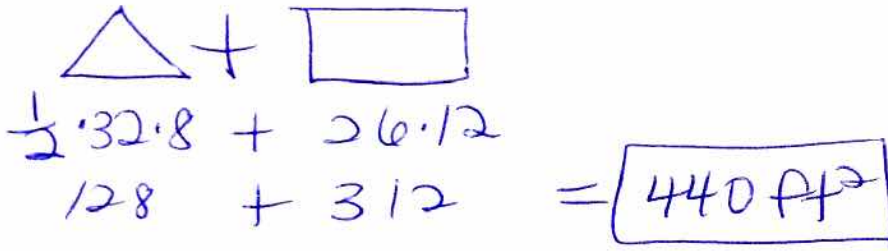
52. Mrs. Faehner will be tiling the area labeled tile, fireplace and hearth. She will be putting new carpet down in the family room and hardwood floors in the kitchen. She only has \$5000 for her renovation budget. (a) Find the area needed for EACH MATERIAL. (b) If the woodflooring costs \$10 per square foot, the tile costs \$3 per square foot and the carpet costs \$3.30 per square foot, does your assistant principle have enough money (with 6% sales tax) to complete this renovation? Show all work.



	<u>Tile</u>	<u>Carpet</u>	<u>HWF</u>
a)	$54 + 16.5 + 16$ <u>786.5</u>	$219.5$	$330$

b)	$\times 3$ <u>\$259.50</u>	$\times 3.30$ <u>\$724.35</u>	$\times 10$ <u>\$3300</u>
Total = $4283.85 (1.06) = 257.3$ tax = <del>\$4540.88</del> <b>Yes!</b>			

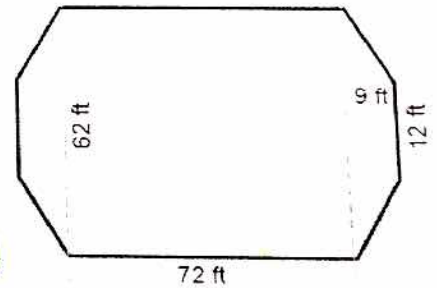
53. Mr. Jones wants to paint the side of his house. To buy paint, he must know the area of the side of the house he needs to paint. What is the area of one side of Mr. Jones' house?



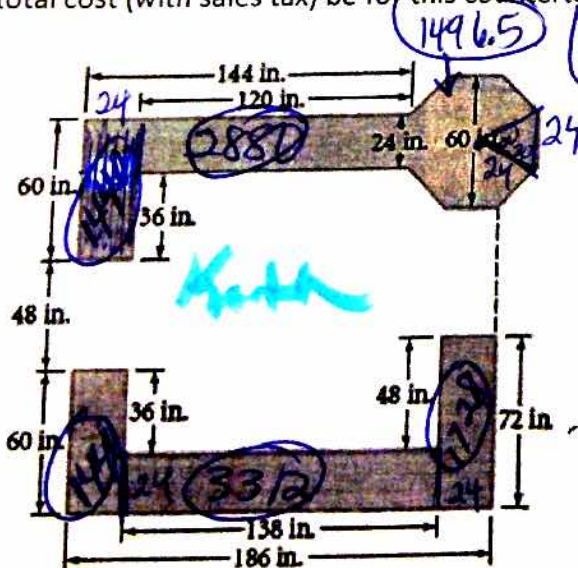
54. Ms. Labadie is making a giant sign in the shape of a raffle ticket with the given dimensions in the figure. Find the area in which the sign will cover.

2 Traps + 1 Rect

$$2 \left( \frac{1}{2} (12+62) \cdot 9 \right) + 72 \cdot 62$$

$$666 + 4464 = \boxed{5130 \text{ ft}^2}$$


55. An interior designer created the kitchen plan shown. The countertop will be constructed of colored concrete. (a) What is the total surface area? (b) If concrete countertops 1.5 inches thick cost \$85 per square foot, what will the total cost (with sales tax) be for this countertop?



$(\frac{1}{2} \cdot 24 \cdot 24 \cdot \sin 60) \cdot 6$

12 in = 1 ft  
144 in<sup>2</sup> = 1 ft<sup>2</sup>

a)  $1440 + 1440 + 2880 + 3312 + 1728 + 1496.5$   
 $= \boxed{12296.50 \text{ in}^2}$

b) convert to ft<sup>2</sup>  
 $\div 144 = 85.4$   
 $\boxed{\$7259}$