DUE:_____

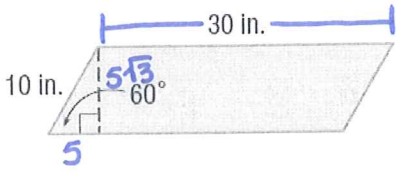
Name: _____

Area Test Review

Directions: Show all work and attempt all questions for credit!

For # 1-6, find the **area** of each parallelogram. Keep answer in *exact* simplest form- simplify all radicals.

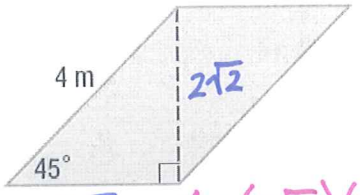
1.



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

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

2.



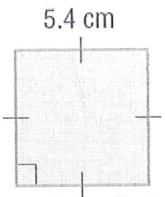
$A = (2\sqrt{2})(2\sqrt{2})$

$A = 4\sqrt{4}$

$A = 4 \cdot 2$

$A = 8m^2$

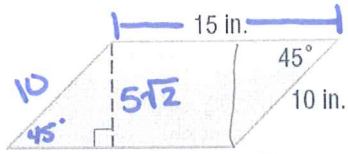
3.



$A = (5.4)(5.4)$

$A = 29.16\ cm^2$

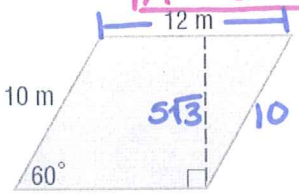
4.



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

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

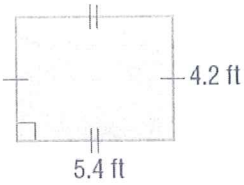
5.



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

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

6.

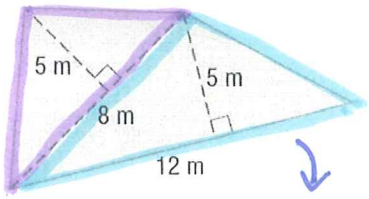


$A = (4.2)(5.4)$

$A = 22.68\ ft^2$

For # 7 – 12, find the **area** of each figure. Round to the nearest tenth if necessary.

7.



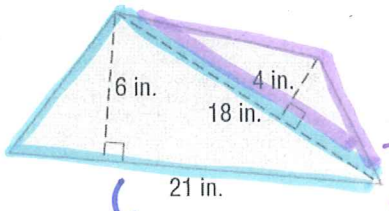
$A = \frac{1}{2}(8)(5)$ $A = \frac{1}{2}(12)(5)$

$A = 30m^2$ $A = 20m^2$

Total area: $30 + 20$

$A = 50m^2$

8.



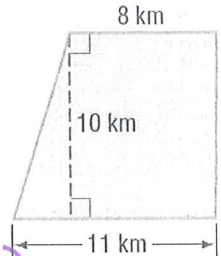
$A = \frac{1}{2}(21)(6)$ $A = \frac{1}{2}(18)(4)$

$A = 63in^2$ $A = 36in^2$

Total area: $63 + 36$

$A = 99\ in^2$

9.

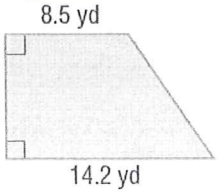


Trapezoid

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

$A = 95\ km^2$

10.

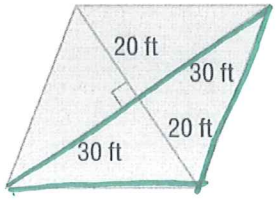


Trapezoid

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

$A = 96.5\ yd^2$

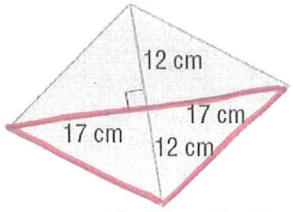
11.



$2(\frac{1}{2} \cdot 60 \cdot 20)$

$A = 1200\ ft^2$

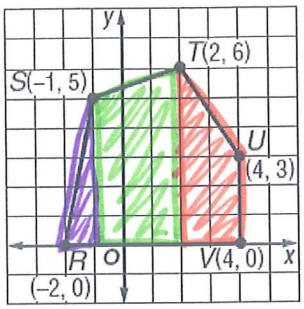
12.



$2(\frac{1}{2} \cdot 34 \cdot 12)$

$A = 408\ cm^2$

13. pentagon $RSTUV$

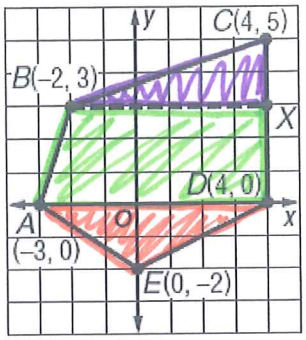


$A = \frac{1}{2}(5)(1) + \frac{1}{2}(3)(5+6) + \frac{1}{2}(2)(3+6)$

$A = 2.5 + 16.5 + 9$

$A = 28 \text{ units}^2$

14.



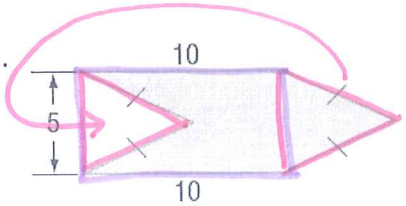
$A = \frac{1}{2}(2)(6) + \frac{1}{2}(3)(6+7) + \frac{1}{2}(7)(2)$

$A = 6 + 19.5 + 7$

$A = 32.5 \text{ units}^2$

For # 17 – 22, find the **area** of each figure or shaded region. Round to the nearest tenth if necessary.

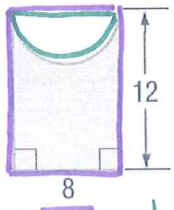
15.



$A = (10)(5)$

$A = 50 \text{ units}^2$

16.



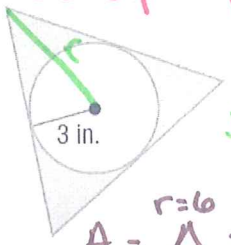
$A = \square - \frac{1}{2}\odot$

$A = (8)(12) - \frac{1}{2}\pi 4^2$

$A = 96 - 8\pi$

$A \approx 70.9 \text{ units}^2$

17. use apothem



$\theta = \frac{360}{3} = 120$

$r = 6$

$r=6 \quad r=3$

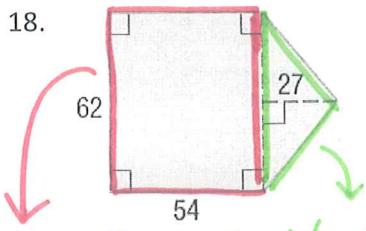
$A = \triangle - \odot$

$A = 3(\frac{1}{2} \cdot 6 \cdot 6 \sin 120) - \pi 3^2$

$A = 46.8 - 9\pi$

$A = 18.5 \text{ in}^2$

18.



$(62)(54)$

$= 3348$

$A = \frac{1}{2}(62)(27)$

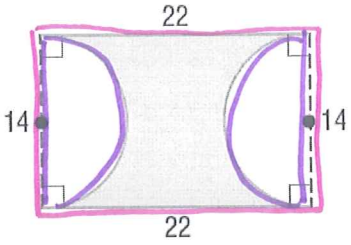
$A = 837$

Total area:

$3348 + 837$

$= 4185 \text{ units}^2$

19.



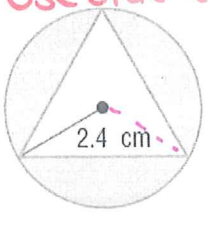
$A = \square - \odot$

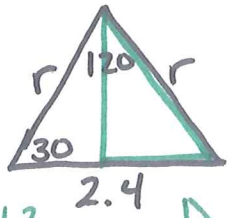
$= (22)(14) - \pi 7^2$

$= 308 - 49\pi$

$A \approx 154.1 \text{ units}^2$

20. use side length





$\cos 30 = \frac{1.2}{r}$

$r = 1.4$

$A = \odot - \triangle$

$A = \pi 1.4^2 - 3(\frac{1}{2} \cdot 1.4^2 \sin 120)$

$A = 2\pi - 2.5$

$A \approx 3.8 \text{ cm}^2$

For # 23 – 28, find the **area** of each REGULAR polygon. Round to the nearest tenth.

21. Octagon with P = 72in.

$n=8$, $s=\frac{72}{8}=9$

$\cos 67.5=\frac{4.5}{r}$ $r=11.8$

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

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

22. Square with P = $84\sqrt{2}m$

$n=4$, $s=\frac{84\sqrt{2}}{4}=21\sqrt{2}$

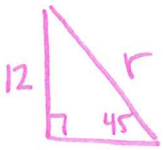
$\cos 45=\frac{10.5\sqrt{2}}{r}$ $r=21$

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

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

23. Square with apothem = 12 in.

$n=4$



$\sin 45=\frac{12}{r}$ $r=17$

$A=4\left(\frac{1}{2}\cdot 17\cdot 17\sin 90\right)$

$A\approx 578\text{ in}^2$

24. Hexagon with apothem = 24cm

$n=6$

$\sin 60=\frac{24}{r}$ $r=27.7$

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

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

25. Triangle with side length=15.5 in.

$n=3$

$\cos 30=\frac{7.75}{30}$ $r=8.9$

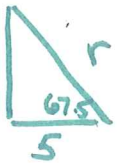
$A=3\left(\frac{1}{2}\cdot 8.9\cdot 8.9\sin 120\right)$

$A\approx 102.9\text{ in}^2$

if $r=9$, $A\approx 105.2\text{ in}^2$

26. Octagon with side length= 10km.

$n=8$

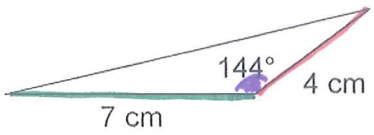


$\cos 67.5=\frac{5}{r}$ $r=13.1$

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

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

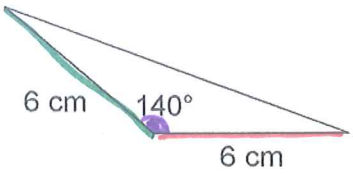
27. Find the area.



$A=\frac{1}{2}\cdot 7\cdot 4\sin 144$

$A\approx 8.2\text{cm}^2$

28. Find the area.

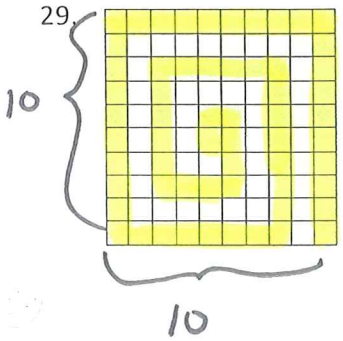


$A=\frac{1}{2}\cdot 6\cdot 6\sin 140$

$A\approx 11.6\text{cm}^2$

For # 29 – 32, find **the probability** that a point chosen at random lies in the shaded region.

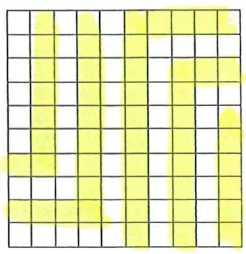
29.



$\frac{\text{shaded}}{\text{total}}=\frac{60}{100}$

60%

30.

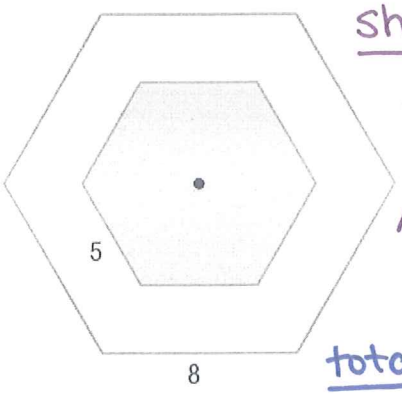


$\frac{\text{shaded}}{\text{total}}=\frac{50}{100}$

$=50\%$

For # 31 – 32, find **the probability** that a point chosen at random lies in the shaded region.

31.



Shaded

$r = 5$

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

$A \approx 65 \text{ units}^2$

total:

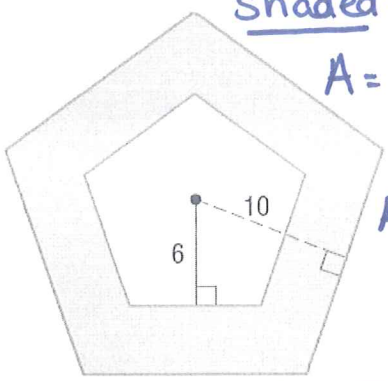
$r = 8$

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

$A \approx 166.3 \text{ units}^2$

Prob.: $\frac{65}{166.3} = 39.1\%$

32.



Shaded: Big − Little

$A = 5\left(\frac{1}{2} \cdot 12.4^2 \sin 72\right) - 5\left(\frac{1}{2} \cdot 7.4^2 \sin 72\right)$

$A \approx 260.7 \text{ units}^2$

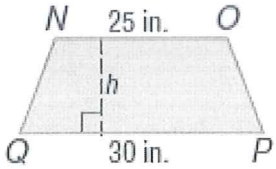
Total: $5\left(\frac{1}{2} \cdot 12.4^2 \sin 72\right)$

$A \approx 381.9 \text{ units}^2$

Prob.: $\frac{260.7}{381.9} = 68.2\%$

For #33-34, Find a missing length.

33. Trapezoid $NOPQ$ has an area of 302.5 square inches. Find the height of $NOPQ$.



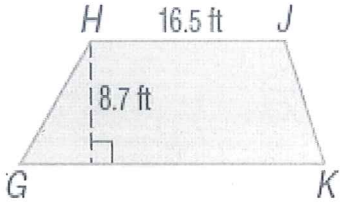
$302.5 = \frac{1}{2}(h)(25+30)$

$302.5 = \frac{1}{2}h(55)$

$302.5 = 27.5h$

$h = 11 \text{ in}$

34. If HJ is 16.5 feet, find GK.



$A = 188.35 \text{ ft}^2$

$188.35 = \frac{1}{2}(8.7)(16.5+b)$

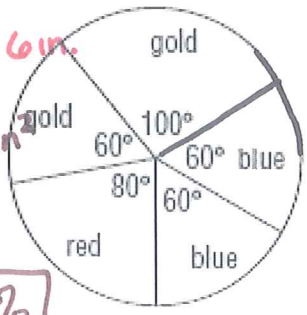
$188.35 = 4.35(16.5+b)$

$188.35 = 71.8 + 4.35b$

$116.55 = 4.35b$

$b = 26.8 \text{ ft}$

Find the **probability** of spinning the color indicated. The diameter is 6in.



35. Red

Sector: $\frac{80}{360} \cdot \pi 3^2 = 6.3\text{in}^2$

total: 9π

Prob.: $\frac{6.3}{9\pi} = 22.3\%$

36. Gold

Sector: $\frac{160}{360} \cdot \pi 3^2 = 12.6\text{in}^2$

Total: 9π

Prob.: $\frac{12.6}{9\pi} = 44.6\%$

For #37-38, find the area of the shaded region and the probability of a point chosen at random being in the shaded region.

37.

Shaded: $\frac{5}{6}$(O − hexagon)

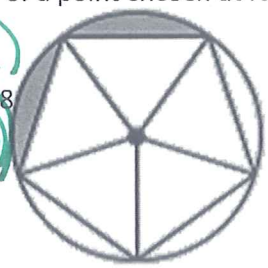
$= \frac{5}{6}(\pi 6^2 - 6(\frac{1}{2} \cdot 6^2 \sin 60))$

$= 16.3 \text{ units}^2$

Total : $\pi 6^2 = 36\pi \text{ units}^2$

Prob : $\frac{16.3}{36\pi} = \boxed{14.4\%}$

38.



Shaded :

$\frac{2}{5}$(O − pentagon)

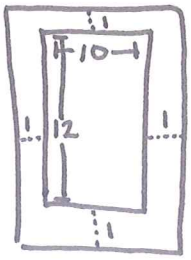
$= \frac{2}{5}(\pi 4^2 - 5(\frac{1}{2} \cdot 4^2 \cdot \sin 72))$

$= 4.9 \text{ units}^2$

Total : $\pi 4^2 = 16\pi \text{ units}^2$

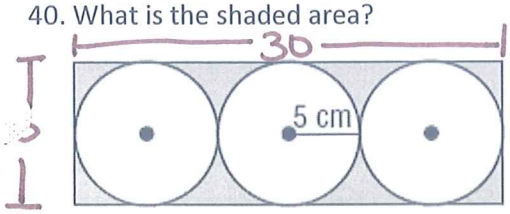
Prob: $\frac{4.9}{16\pi} = \boxed{9.7\%}$

39. A rectangular pane of glass measuring 10 inches by 12 inches is surrounded by a wooden frame that is 1 inch wide. What is the area of the window, including the frame?



$(14)(12) = \boxed{168 \text{ in}^2}$

40. What is the shaded area?



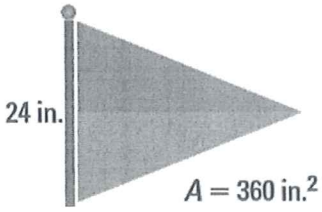
$A = \square - 3\odot$

$A = (30)(10) - 3\pi 5^2$

$A = 300 - 75\pi$

$\boxed{A \approx 64.4 \text{ cm}^2}$

41. 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?

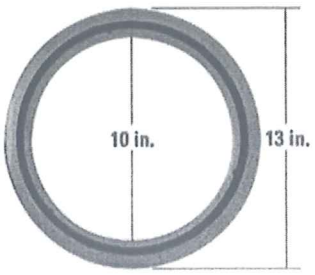


$360 = \frac{1}{2}(24)h$

$360 = 12h$

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

42. 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?



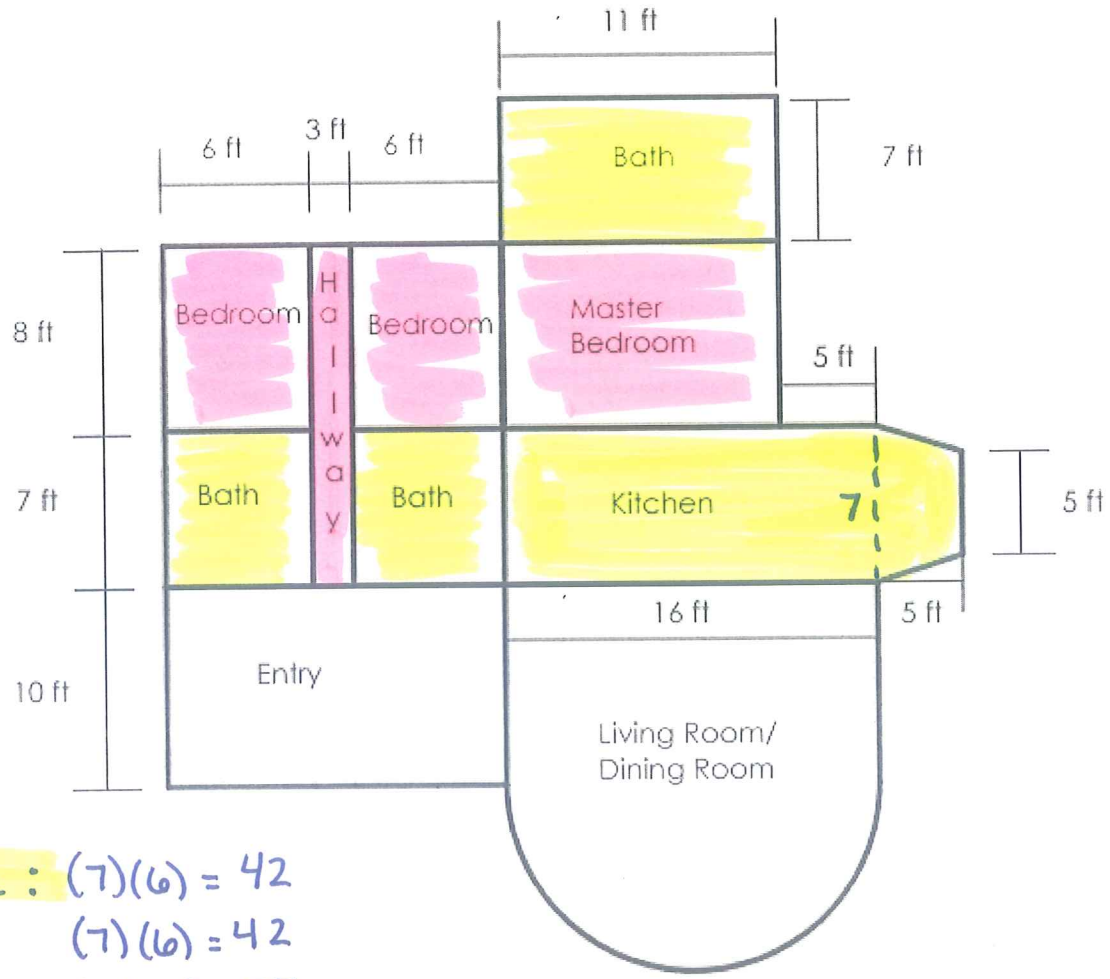
$A = \underset{r=6.5}{\text{Large}} - \underset{r=5}{\text{Small}}$

$A = \pi 6.5^2 - \pi 5^2$

$A = 42.25\pi - 25\pi$

$\boxed{A = 17.25\pi \text{ in}^2}$

43. Leah would like to tile the 3 bathrooms and the kitchen. She would also like to carpet the 3 bedrooms (Bedrooms and Master Bedroom) and the hallway. A) Find the area for each type of flooring. B) If tile costs $0.02 per square inch and carpet costs $15.00 per square yard, how much would this renovation cost Leah including tax?



a) Tile: $(7)(6) = 42$

$(7)(6) = 42$

$(11)(7) = 77$

$(16)(7) + \frac{1}{2} \cdot 5(7+5) = 112 + 30 = 142$

Total: 303 ft^2

Carpet: $(8)(6) = 48$

$(8)(6) = 48$

$(8)(11) = 88$

$(3)(15) = 45$

Total: 229 ft^2

Subtotal = $1253.64

tax = $75.22

total = $1328.86

b) $144\ in^2 = 1\ ft^2$

$303(144) = 43632\ in^2$

Cost: $(0.02)(43632) = \$872.64$

$9\ ft^2 = 1\ yd^2$

$\frac{229}{9} = 25.4\ yd^2$

Cost = $(25.4)(15) = \$381$