Key

Geometry: Ch 9 Group Review

1) Find the area of a square that has a perimeter of 36 in.

$36 = 4s$
$9 = s$

$A = s^2$
$= (9)^2$
$\boxed{= 81 \text{ in}}$

2) Find the height of a triangle that has an area of $6x^3y$ in^2 and a base of 4xy in.

$A = \frac{1}{2}bh$
$6x^3y = \frac{1}{2}(4xy)(h)$
$6x^3y = (2xy)(h)$
$3x^2 = h$

$\boxed{h = 3x^2 \text{ in.}}$

3) Find the area of a rhombus that has $d_1 = 21$ yd and $d_2 = 24$ yd.

$A = \frac{1}{2}(d_1)(d_2)$
$= \frac{1}{2}(21)(24)$
$\boxed{= 252 \text{ yd}^2}$

4) Find the area of a kite that has $d_1 = 32$m and $d_2 = 18$m.

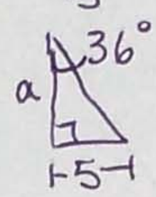
$A = \frac{1}{2}(d_1)(d_2)$
$= \frac{1}{2}(32)(18)$
$\boxed{= 288 \text{ m}^2}$

5) Find the area of a circle with center J that has a circumference of 14π yd. (leave answer in terms of π)

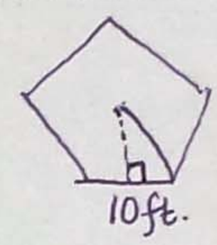
$14\pi = 2\pi r$
$7 = r$
$A = \pi r^2$
$= \pi(7)^2$
$\boxed{= \pi(49) \text{ yd}^2 \approx 153.94 \text{ yd}^2}$

6) Find the area of a regular pentagon with a side length of 10 ft. (draw a diagram, calculator allowed)

$\frac{360}{5} = 72°$



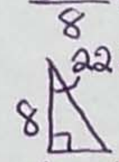
$\tan 36 = \frac{5}{a}$
$a = \frac{5}{\tan 36}$



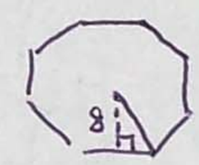
$P = (5)(10)$
$= 50$
$A = \frac{1}{2}\left(\frac{5}{\tan 36}\right)(50)$
$\boxed{\approx 172.05 \text{ ft}^2}$ ← DON'T ROUND UNTIL THIS STEP!

7) Find the area of a regular octagon with an apothem length of 8 cm. (draw a diagram, calculator allowed)

$\frac{360}{8} = 45°$



$\tan 22.5 = \frac{x}{8}$
$x = 8(\tan 22.5)$
$2x = 16(\tan 22.5)$ ← SIDE LENGTH
$P = 8(16)(\tan 22.5)$
$A = \frac{1}{2}(8)[(8)(16)(\tan 22.5)]$
$\boxed{\approx 212.08 \text{ cm}^2}$ ← DON'T ROUND UNTIL THIS STEP!

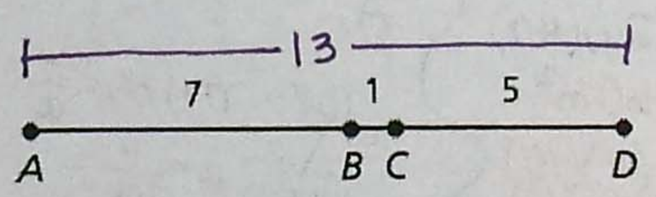


8) Describe the effect of each change on the perimeter and area of the given figure:
The base and height of a triangle with base of 8 ft and height of 20 ft are both multiplied by 4.

PERIMETER: multiplied by 4

AREA: multiplied by 4^2 or 16.

9) Find the probability that…



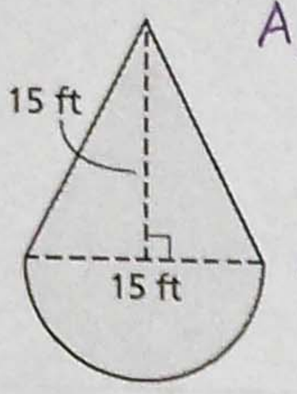
a) A point chosen at random is not on $\overline{CD}$

$\frac{8}{13}$ $\boxed{\approx 0.62}$

b) A point chosen at random is on $\overline{BC}$ or $\overline{CD}$.

$\frac{6}{13}$ $\boxed{\approx 0.46}$

10) Find the area of the shape:



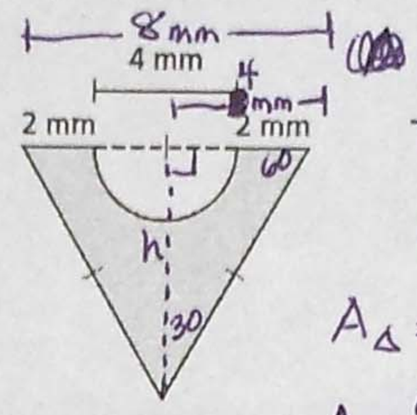
$A_\triangle = \frac{1}{2}bh$
$= \frac{1}{2}(15)(15)$
$= 112.5$

$A_\circ = \frac{1}{2}\pi r^2$
$= \frac{1}{2}\pi(7.5)^2$
$= 28.125\pi$

$A = 112.5 + 28.125\pi$

$\boxed{\approx 200.86\ ft^2}$

11) Find the area of the shaded region:



$\tan 60 = \frac{h}{4}$

$h = 4\tan 60$

$A_\triangle = \frac{1}{2}(8)(4\tan 60)$

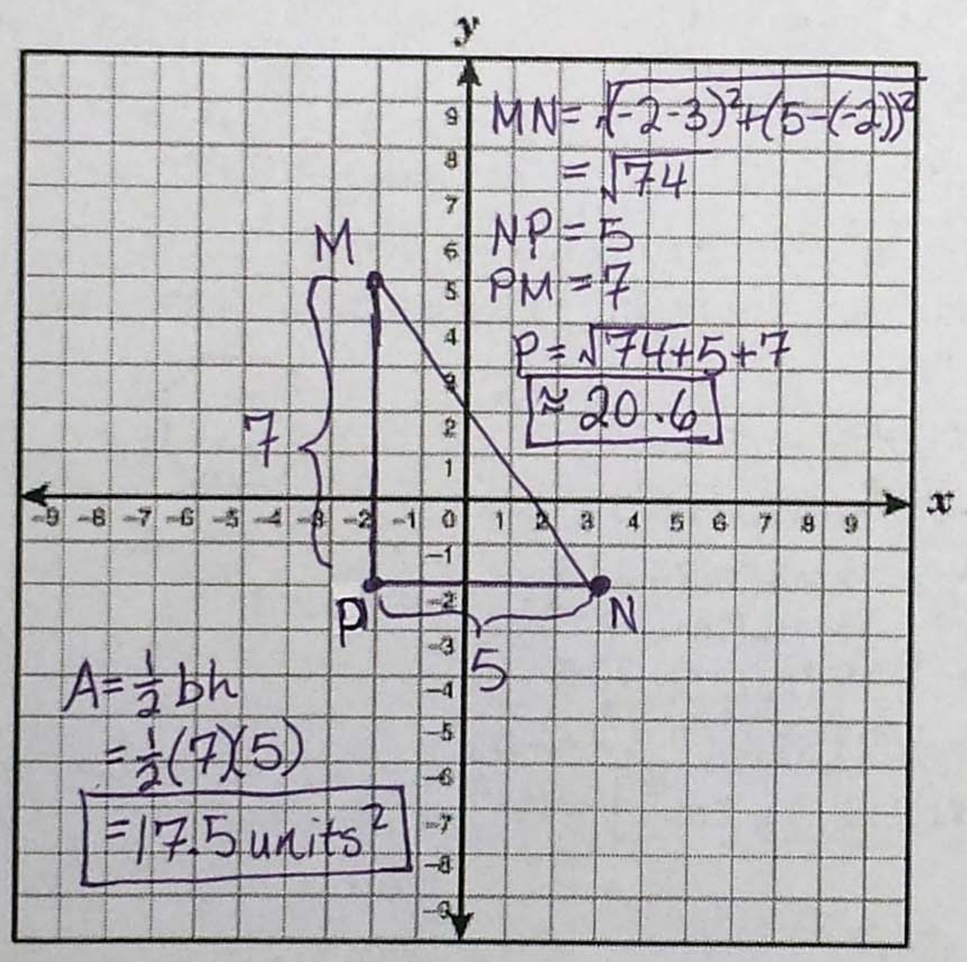
$A_\circ = \frac{1}{2}\pi(2)^2$
$= 2\pi$

$A = \frac{1}{2}(8)(4\tan 60) - 2\pi$

$\boxed{\approx 21.43\ mm^2}$

12) Draw and classify the polygon with the given vertices. Find the perimeter and area of the polygon.

M (-2, 5), N (3, -2), P(-2, -2)



$MN = \sqrt{(-2-3)^2 + (5-(-2))^2}$
$= \sqrt{74}$

$NP = 5$

$PM = 7$

$P = \sqrt{74} + 5 + 7$

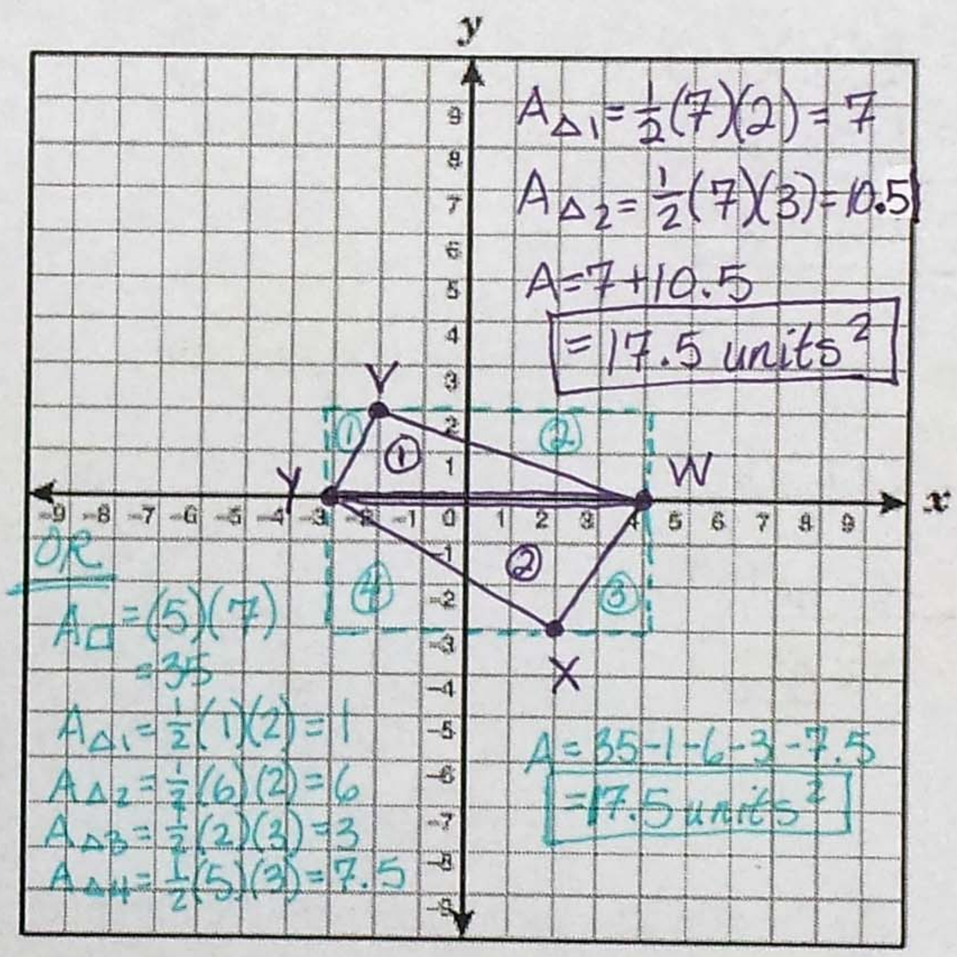
$\boxed{\approx 20.6}$

$A = \frac{1}{2}bh$
$= \frac{1}{2}(7)(5)$

$\boxed{= 17.5\ units^2}$

13) Find the area of the polygon with the given vertices:

V(-2, 2), W(4, 0), X(2, -3), Y(-3, 0)



$A_{\triangle 1} = \frac{1}{2}(7)(2) = 7$

$A_{\triangle 2} = \frac{1}{2}(7)(3) = 10.5$

$A = 7 + 10.5$

$\boxed{= 17.5\ units^2}$

OR

$A_\square = (5)(7)$
$= 35$

$A_{\triangle 1} = \frac{1}{2}(1)(2) = 1$

$A_{\triangle 2} = \frac{1}{2}(6)(2) = 6$

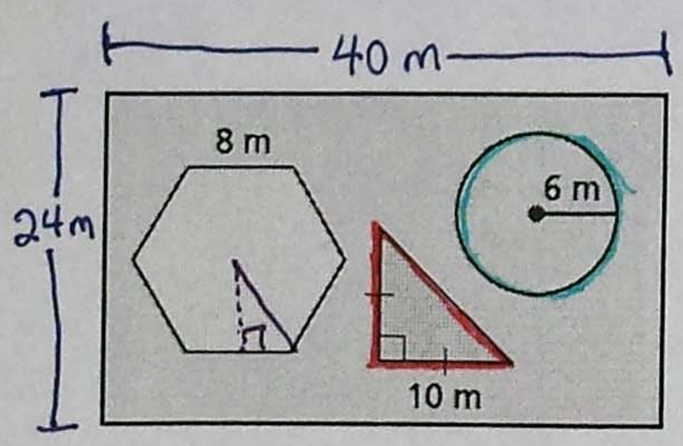
$A_{\triangle 3} = \frac{1}{2}(2)(3) = 3$

$A_{\triangle 4} = \frac{1}{2}(5)(3) = 7.5$

$A = 35 - 1 - 6 - 3 - 7.5$

$\boxed{= 17.5\ units^2}$

14) Find the probability that a point chosen at random inside the 40m x 24m rectangle is inside the rectangle but not inside the hexagon, triangle, or circle.

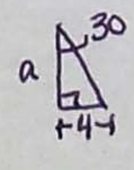


$A_\square = (24)(40)$
$= 960\ m^2$

$A_\triangle = \frac{1}{2}(10)(10)$
$= 50\ m^2$

$A_\circ = \pi(6)^2$
$= 36\pi$

$A_\bigcirc = \frac{360}{6} = 60$



$\tan 30 = \frac{4}{a}$

$a = \frac{4}{\tan 30}$

$P = 8(6) = 48\ m$

$A = \frac{1}{2}\left(\frac{4}{\tan 30}\right)(48)$

≈ 166.28

PROBABILITY:

$\frac{960 - 50 - 36\pi - \left[\frac{1}{2}\left(\frac{4}{\tan 30}\right)(48)\right]}{960}$

$\boxed{\approx 0.66}$