Name: Key

Date:

Period:

Geometry Semester 1 Study Guide

State which metric unit you would probably use to measure each item.

1. Length of a notebook

cm

2. Radius of a tennis ball

mm

Big → Small multiply

Small → Big Divide

1 in = 2.5

3. **Complete each sentence**

A. 120 in = 10 ft

$\frac{120}{12} = 10$ ft

B. 8 in ≈ 20 cm

8 · 2.5

20.0 cm

C. 10 km = 10,000 m

10 · 1000

10,000 m

D. 10 mi ≈ 16 km

1 mi = 1.6 km

10 · 1.6 = 16 km

Solve each equation

4. $5(m-1) = -25$

$5m - 5 = -25$

$+5 \quad +5$

$\frac{5m}{5} = \frac{-20}{5}$

$m = -4$

5. $3n + 7 = 28$

$-7 \quad -7$

$\frac{3n}{3} = \frac{21}{3}$

$n = 7$

6. $\frac{7}{3}a - 2 = -5$

$+2 \quad +2$

$\frac{3}{7} \cdot \frac{7}{3} a = -\frac{3}{1} \cdot \frac{3}{7}$

$a = -\frac{9}{7}$

$<$, $>$ open circle

$\leq$, $\geq$ closed circle

$<$, $\leq$ Shade Left

$>$, $\geq$ Shade Right

Solve and graph each inequality

7. $-3n - 8 < 2n + 7$

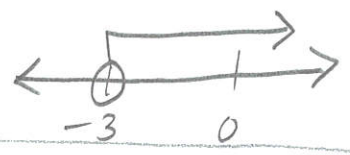
$-2n \quad -2n$

$-5n - 8 < 7$

$+8 \quad +8$

$\frac{-5n}{-5} < \frac{15}{-5}$

$n > -3$



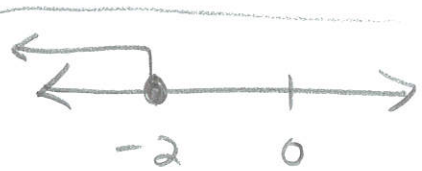
Divide or multiply by negative Flip the inequality

8. $3z + 8 \leq 2$

$-8 \quad -8$

$\frac{3z}{3} \leq \frac{-6}{3}$

$z \leq -2$

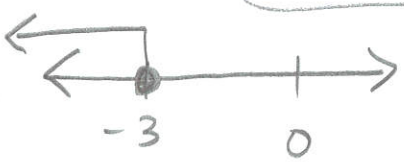


9. $-3w - 1 \geq 8$

$+1 \quad +1$

$\frac{-3w}{-3} \geq \frac{9}{-3}$

$w \leq -3$



Write the ordered pair and name the quadrant in which each point is located

10. B

$(-2, 3)$ II

11. J

$(-1, -1)$ III

12. P

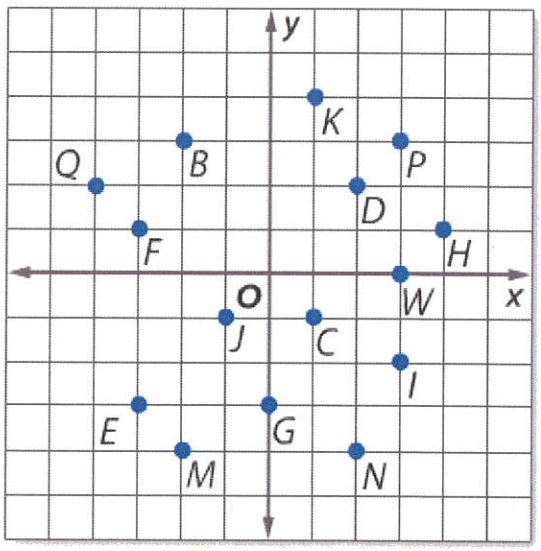
$(3, 3)$ I

13. G

$(0, -3)$ None

14. I

$(3, -2)$ IV



II	I
III	IV

(x, y) Left/Right, Up/Down

Graph and label each point and name the quadrant in which each point is located

15. M(-1,3)

II

16. S(2,0)

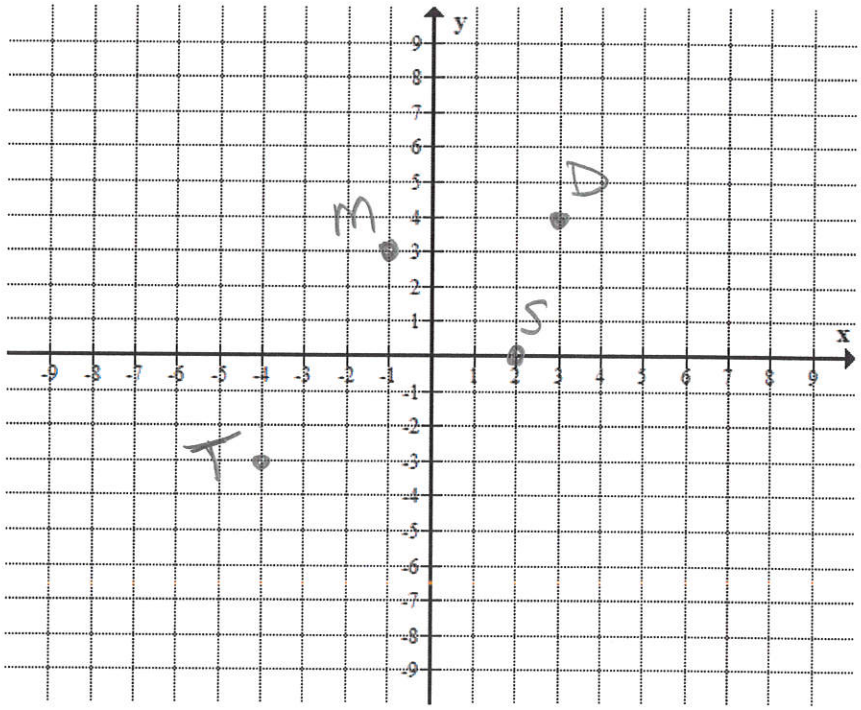
None

17. D(3,4)

I

18. T(-4,-3)

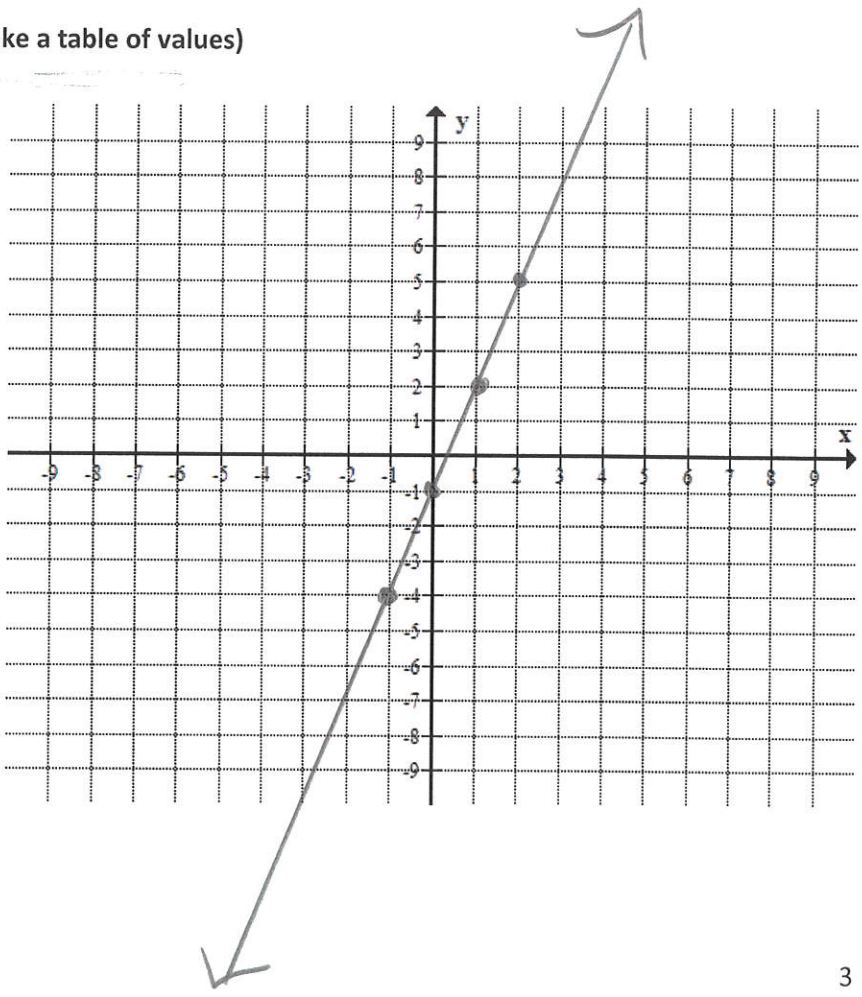
III



Graph four points that satisfy the equation (make a table of values)

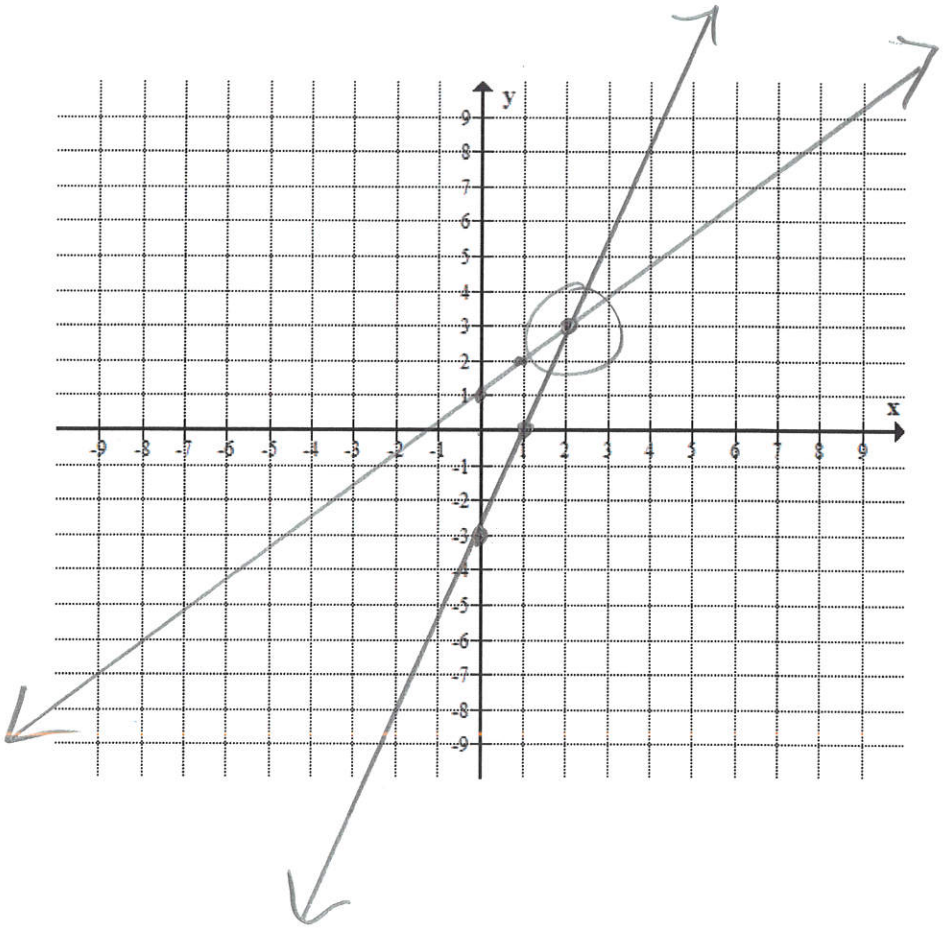
19. $y = 3x - 1$

x	$y = 3x - 1$	y
-1	$3(-1) - 1 = -3 - 1 =$	-4
0	$3(0) - 1 = 0 - 1 =$	-1
1	$3(1) - 1 = 3 - 1 =$	2
2	$3(2) - 1 = 6 - 1 =$	5



Solve the system by graphing

20. $y = 3x - 3$
$y = x + 1$



(2, 3)

Solve the system by substitution

21. $-5x + 3y = 16$
$x = -2y + 2$

$-5(-2y + 2) + 3y = 16$

$10y - 10 + 3y = 16$

$13y - 10 = 16$

$+10 \quad +10$

$\frac{13y}{13} = \frac{26}{13}$

$y = 2$

$x = -2(2) + 2$

$= -4 + 2$

$x = -2$

(-2, 2)

(2, -2)

Solve the system by elimination

22. $3y + x = 3$) 5
$2y - 5x = -15$

$15y + 5x = 15$

$2y - 5x = -15$

$\frac{17y}{17} = \frac{0}{17}$

$y = 0$

$3(0) + x = 3$

$0 + x = 3$

$x = 3$

(3, 0)

23. **Simplify each radical expression**

a. $\sqrt{125}$

$5\sqrt{5}$

125
5 25
5 5

c. $\sqrt{\frac{121}{16}} = \frac{\sqrt{121}}{\sqrt{16}} = \frac{11}{4}$

b. $\sqrt{98x^3y^6}$

$7xy^3\sqrt{2x}$

98 $x \cdot x \cdot x$
2 49 $y \cdot y$ $y \cdot y$ $y \cdot y$
7 7

d. $\frac{3}{\sqrt{48}} \cdot \frac{\sqrt{48}}{\sqrt{48}} = \frac{3\sqrt{48}}{48}$

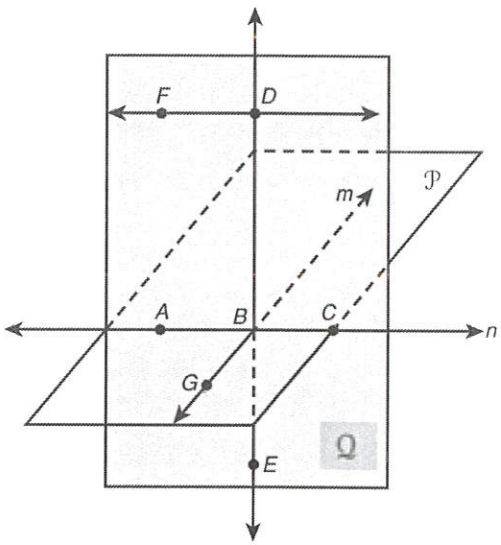
$= \frac{3 \cdot 2 \cdot 2\sqrt{3}}{48} = \frac{12\sqrt{3}}{48} = \frac{1\sqrt{3}}{4}$

48
2 24
2 12
2 6
2 3

Figure A

24. In Figure A what is a name for the plane containing point *G*?

ABG or $\mathcal{P}$



25. Use Figure A to name the segment that is on plane $\mathcal{P}$ but is NOT on line *n*?

$\overline{GB}$

26. Use Figure A to name a pair of opposite rays.

$\overrightarrow{BA}$ & $\overrightarrow{BC}$ OR $\overrightarrow{BE}$ & $\overrightarrow{BD}$

27. Use Figure A to name the intersection of the two planes

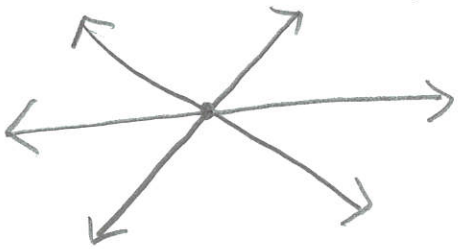
$\overleftrightarrow{AC}$ or n

28. Use Figure A to name **FOUR** points on plane $\mathcal{P}$.

A, B, C, G

29. Draw a ray with endpoint X that passes through Y.

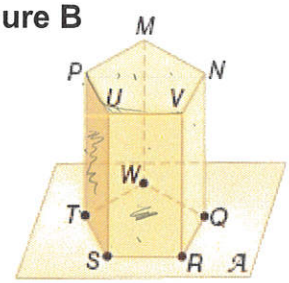
30. Draw three coplanar lines that intersect at one point.



31. How many plane appear in the Figure B?

7

Figure B



32. At what point or in what line do planes PUV, TSU, and VUS Intersect.

U

33. Use a ruler to measure $\overline{AB}$ to the nearest 16th of an inch

$4\frac{1}{8}$"

A ——————————— B

34. Use a ruler to measure $\overline{CD}$ in centimeters.

6.1cm

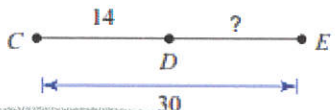
C ——————————— D

35. Find the measure of $\overline{DE}$

$14 + x = 30$

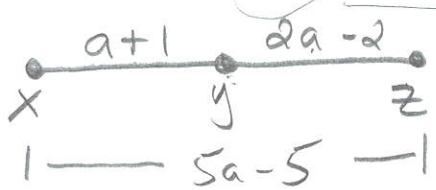
$-14 \quad -14$

$x = 16$



$\overline{DE} = 16$

36. Find the value of a and $\overline{XY}$ if Y is between X and Z if $\overline{XY} = a+1$, $\overline{XZ} = 5a-5$, and $\overline{YZ} = 2a-2$.



$a+1+2a-2 = 5a-5$

$3a-1 = 5a-5$

$-5a \quad -5a$

$-2a-1 = -5$

$+1 \quad +1$

$-2a = -4$

$-2 \quad -2$

$a = 2$

$XY = 2+1$

$XY = 3$

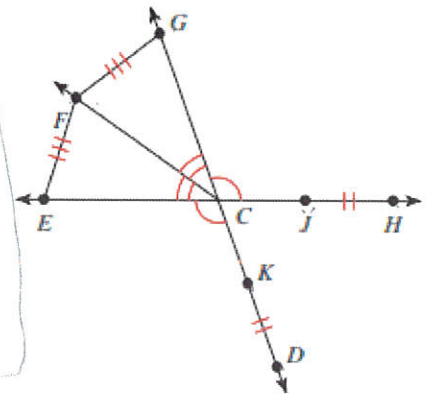
37. Name the congruent segments and congruent angles shown in the figure.

$\overline{EF} \cong \overline{GF}$

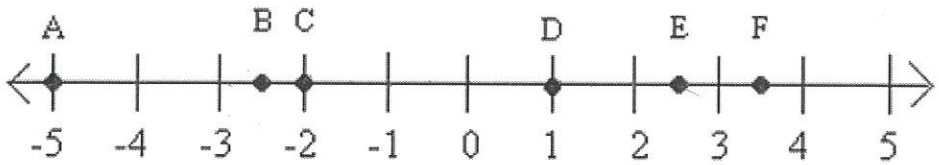
$\overline{HJ} \cong \overline{DK}$

$\angle GCF \cong \angle FCE$

$\angle GCH \cong \angle ECD$



38. Use the number line to find each measure.



a. $\overline{AE}$

7.5

b. $\overline{FB}$

6

39. Find the distance between $C(-7,-1)$ and $D(3,7)$.

$x_1 \; y_1 \qquad x_2 \; y_2$

$d = \sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$

$d = \sqrt{(3--7)^2 + (7--1)^2}$

$= \sqrt{(3+7)^2 + (7+1)^2}$

$= \sqrt{10^2 + 8^2}$

$= \sqrt{100+64}$

$= \sqrt{164}$

$= 2\sqrt{41}$

164

2 82

2 41

40. Find the coordinates of *M*, the midpoint of $\overline{ST}$, for $S(-10,8)$ and $T(4,6)$.

$\left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right) = \left(\frac{-10+4}{2}, \frac{8+6}{2}\right)$

$= \left(\frac{-6}{2}, \frac{14}{2}\right) = (-3, 7)$

41. Find the coordinates of Y, the endpoint of $\overline{XY}$, if $X = (12,-2)$ and the midpoint is $M = (-6,10)$.

$Y = (x_1, y_1)$

$\frac{x_1+12}{2} = -6 \cdot 2$

$x_1 + 12 = -12$

$-12 \quad -12$

$x_1 = -24$

$\frac{y_1+-2}{2} = 10 \cdot 2$

$y_1 - 2 = 20$

$+2 \quad +2$

$y_1 = 22$

$(-24, 22)$

42. Find the value of x and $\overline{AC}$ if C is the midpoint of $\overline{AB}$, $\overline{AC} = 4x+5$, and $\overline{AB} = 78$.

$4x+5$

$A = 39 \quad C \quad B$

$|\text{---} \quad 78 \quad \text{---}|$

$\frac{78}{2} = 39$

$\overline{AC} = 39$

$4x + 5 = 39$

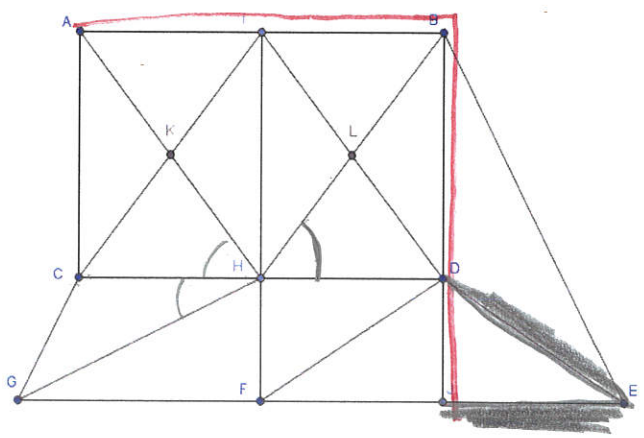
$-5 \quad -5$

$\frac{4x}{4} = \frac{34}{4}$

$x = 8.5$

43. Use the **Figure C** to answer the following questions

Figure C



a. Name three angles that have H as a vertex

$\angle CHK \quad \angle CHG$

$\angle LHD$

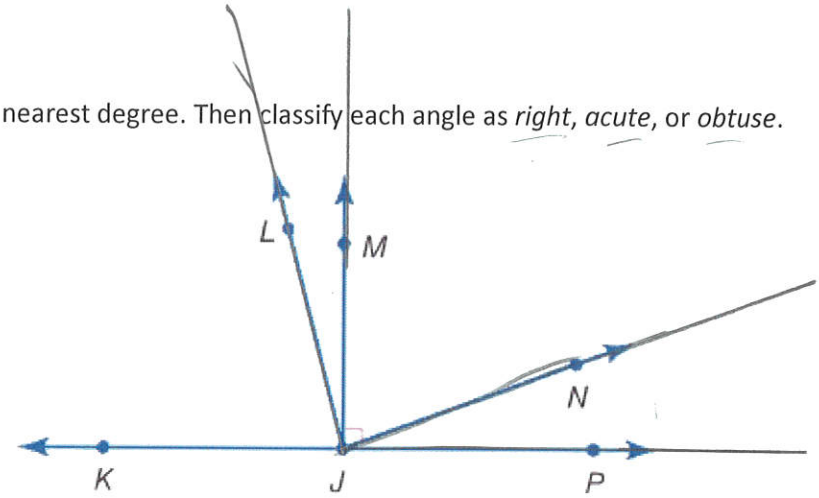
b. Name the sides of $\angle JED$

$\overrightarrow{EJ} \quad \overrightarrow{ED}$

c. Name a point in the interior of $\angle ABJ$

H

44. Use a protractor to measure the angle to the nearest degree. Then classify each angle as *right*, *acute*, or *obtuse*.



a. $\angle LJP$

105°
obtuse

b. $\angle MJN$

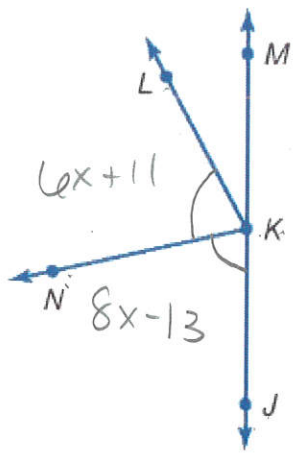
70° acute

45. In the figure $\overrightarrow{KJ}$ and $\overrightarrow{KM}$ are opposite rays, and $\overrightarrow{KN}$ bisects $\angle JKL$. If $m\angle JKN = 8x - 13$ and $m\angle NKL = 6x + 11$, find $m\angle JKN$.

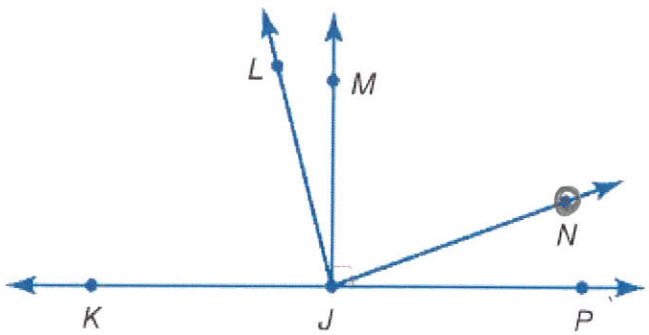
$6x + 11 = 8x - 13$
$-8x \quad -8x$
$-2x + 11 = -13$
$-11 \quad -11$
$\frac{-2x}{-2} = \frac{-24}{-2} \quad x = 12$

$6(12) + 11$
$72 + 11 = 83$

$\angle JKN = 83°$



46. Use the figure to name each of the following



a. A ray with end point *K*

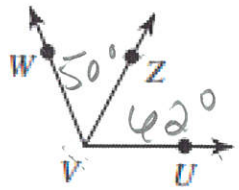
$\overrightarrow{KJ}$ or $\overrightarrow{KP}$

b. A angle with *N* in its interior

$\angle MJP$ or $\angle LJP$

47. Find $m\angle WVU$ if $m\angle ZVU = 62^\circ$ and $m\angle WVZ = 50^\circ$

$50 + 62 = 112^\circ$



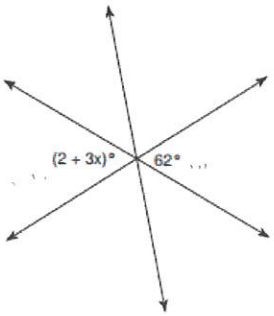
48. Find x

$2 + 3x = 62$

$-2 \quad -2$

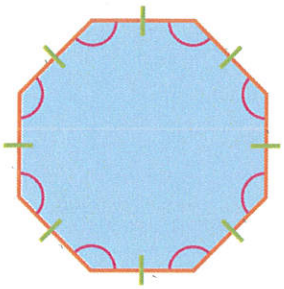
$\frac{3x}{3} = \frac{60}{3}$

$x = 20$



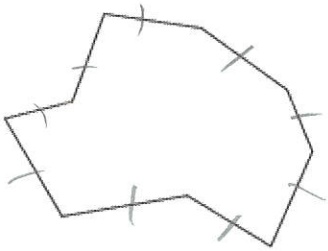
49. Name the polygon by its number of sides. Then classify it as convex or concave and regular or irregular.

a.



octagon
convex
regular

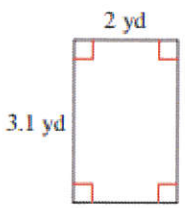
b.



nonagone
concave
irregular

50. Find the perimeter/circumference and area of each figure

a.



$A = lw$

$A = 2 \cdot 3.1$

$A = 6.2 yd^2$

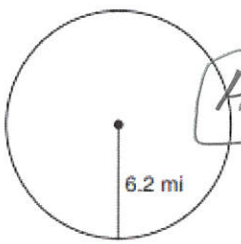
$P = 2l + 2w$

$= 2 \cdot 3.1 + 2 \cdot 2$

$6.2 + 4$

$P = 10.2 yds$

b.



$A = \pi r^2$

$A = 120.76282116 mi^2$

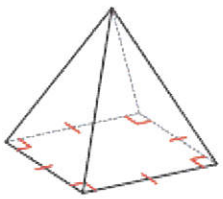
$C = 2\pi r$

$= 2\pi \cdot 6.2$

$C \approx 38.9557489 mi$

51. Determine whether the solid is a polyhedron. Then name the solid.

a.



square pyramid

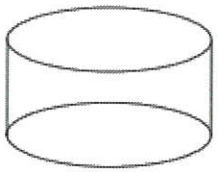
polyhedron

b.

sphere

Not polyhedron

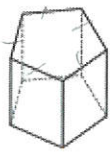
c.



cylinder

Not polyhedron

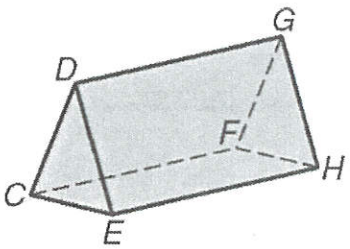
d.



pentagonal prism

polyhedron

52. Name the bases, faces, edges and vertices of the polyhedron



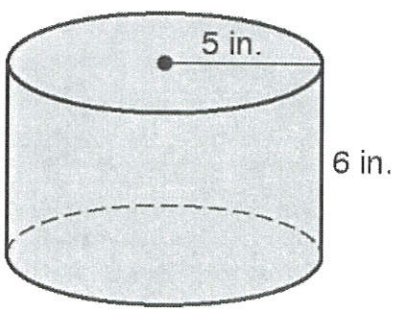
Bases: $\triangle CDE$, $\triangle FGH$

Faces: DGFC, DGHE, FHCE

Edges: $\overline{CD}$, $\overline{DE}$, $\overline{CE}$, $\overline{CF}$, $\overline{DG}$, $\overline{EH}$, $\overline{FG}$, $\overline{GH}$, $\overline{FH}$

Vertices: C, D, E, F, G, H

53. Find the surface area and volume of the solid. Round to the nearest 10th.



$SA = 2\pi rh + 2\pi r^2$

$= 2\pi \cdot 5 \cdot 6 + 2\pi \cdot 5^2$

$SA = 345.5751919$

$SA = 345.6\ in^2$

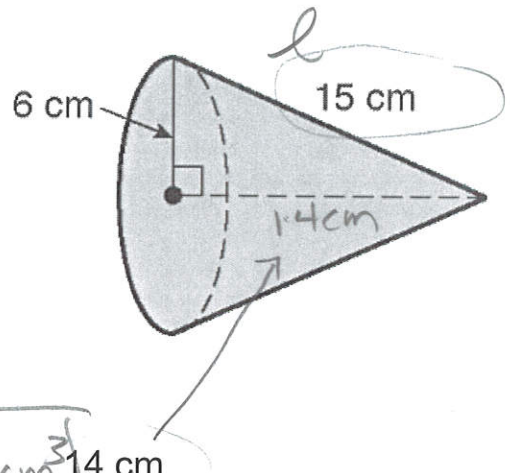
$V = \pi r^2 h$

$= \pi \cdot 5^2 \cdot 6$

$V = 471.238898$

$V = 471.2\ in^3$

54. Find the surface area and volume of the solid. Round to the nearest 10th.



$SA = \pi r l + \pi r^2$

$= \pi \cdot 6 \cdot 15 + \pi \cdot 6^2$

$SA = 395.84067744$

$SA = 395.8\ cm^2$

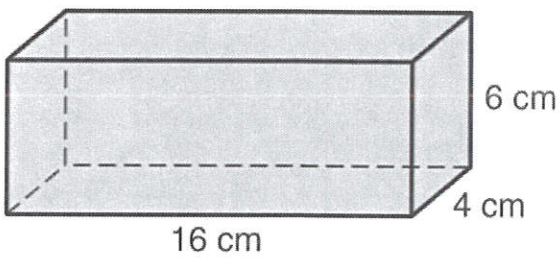
$V = \frac{1}{3} \pi r^2 \cdot h$

$= \left(\frac{1}{3}\right) \pi \cdot 6^2 \cdot 14$

$V = 527.87575658$

$V = 527.8\ cm^3$

55. Find the surface area and volume of the solid.



$V = l w h$

$= 16 \cdot 4 \cdot 6$

$V = 384\ cm^3$

$SA = 2lw + 2wh + 2lh$

$= 2 \cdot 16 \cdot 4 + 2 \cdot 4 \cdot 6 + 2 \cdot 16 \cdot 6$

$SA = 368\ cm^2$