Geometry Chapter 1 Review Name Key

1. Use the given information to find x and AB given line m is a bisector of $\overline{AB}$.

$x =$ 5

$AB =$ 104 52+52=104

$AC = BC$

$12x - 8 = 10x + 2$

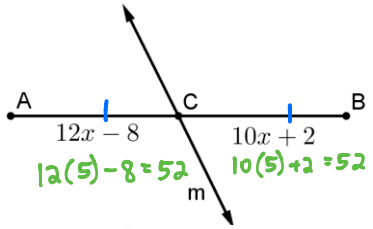
$-10x \quad -10x$

$2x - 8 = 2$

$+8 \quad +8$

$\frac{2x}{2} = \frac{10}{2}$

$x = 5$



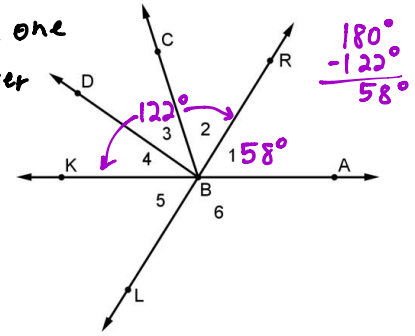
2. Use the diagram at the right to answer each question.

a. Name a linear pair of angles. ∠5 & ∠6 ← more than one right answer

b. Name an angle supplementary to $\angle ABC$. ∠CBK

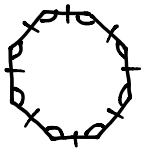
c. Name a pair of vertical angles. ∠1 & ∠5

d. If $m\angle KBR = 122°$, then $m\angle RBA =$ 58°



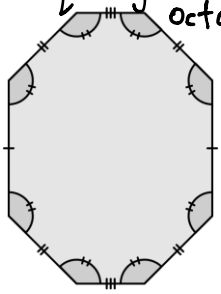
3. Make a sketch of a regular octagon. Use appropriate markings to show it is regular.

all sides ≅
all angles ≅
↳ 8 sides

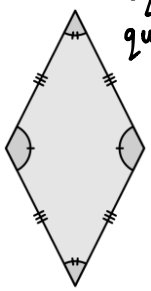


4. Determine if each of the following polygons are equilateral, equiangular, regular, or none of the above. Classify each by the number of sides.

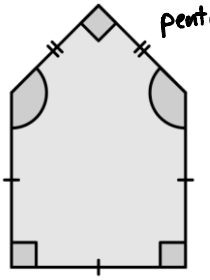
a. equiangular octagon



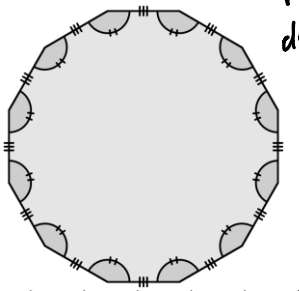
b. equilateral quadrilateral



c. none pentagon



d. regular dodecagon



5. Use the graph to answer each question.

a. What is the distance between H and Y?

$3^2 + 6^2 = d^2$

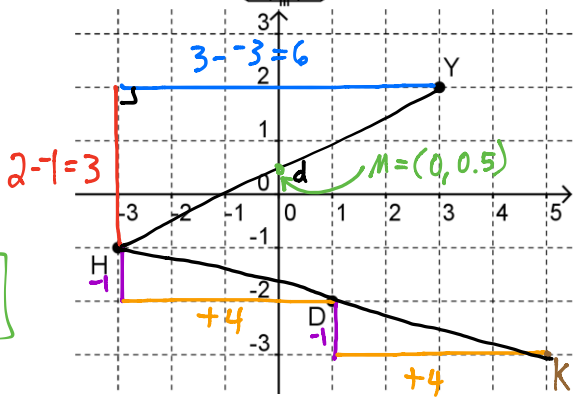
$9 + 36 = d^2$

$\sqrt{45} = \sqrt{d^2}$

$HY = d \approx 6.7$

b. What is the midpoint of $\overline{HY}$?

$\left(\frac{3+-3}{2}, \frac{2+-1}{2}\right) = \left(\frac{0}{2}, \frac{1}{2}\right) =$ (0, 0.5)



c. If D is the midpoint of $\overline{HK}$, what are the coordinates of K?

H = (-3, -1)

+4 -1

D = (1, -2)

+4 -1

K = (5, -3)

6. Given the points $G = (3, 7)$ and $M = (5, -9)$

a. Find the coordinates of the midpoint of $\overline{GM}$.

Midpoint $= \left(\frac{3+5}{2}, \frac{7+-9}{2}\right) = \left(\frac{8}{2}, \frac{-2}{2}\right) = (4, -1)$

b. Find GM.

$a^2 + b^2 = d^2$

$(5-3)^2 + (-9-7)^2 = d^2$

$2^2 + (-16)^2 = d^2$

$4 + 256 = d^2$

$260 = d^2$

$\sqrt{260} = d$

$16.1 \approx d = GM$

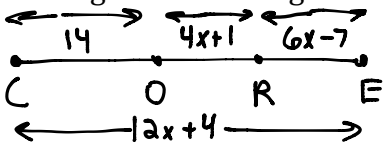
c. If M is the midpoint of $\overline{GT}$ find the coordinates of T.

$G = (3, 7)$ (+2, −16)

$M = (5, -9)$ (+2, −16) $\rightarrow T = (7, -25)$

7. Points O and R lie between C and E. Point O is between C and R. Given $CE = 12x + 4, OR = 4x + 1, ER = 6x - 7, OC = 14$

a. Draw and label a diagram with the given information.



$CO + OR + RE = CE$

b. Solve for x.

$14 + 4x + 1 + 6x - 7 = 12x + 4$

$10x + 8 = 12x + 4$

$-10x \quad -4 \quad -10x \quad -4$

$4 = 2x$

$2 = x$

c. Determine OE.

$OE = 4(2) + 1 + 6(2) - 7$

$= 9 + 5$

$= 14$

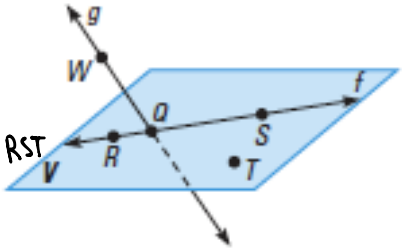
d. Determine CE.

$CE = 12(2) + 4 = 28$

e. Is point O the midpoint of $\overline{CE}$? Explain.

Yes because $CO = 14$ and $OE = 14$ we know $\overline{CO} \cong \overline{OE}$ so by the definition of a midpoint we know O is the midpoint of $\overline{CE}$.

8. Use the diagram at the right to answer the following.



a. Name three collinear points. R, Q, S

b. Give two other names for $\overleftrightarrow{WQ}$. $\overleftrightarrow{QW}$, line g

c. Give another name for plane V. (more than one correct) Plane RQT, Plane RST, Plane QST, etc.

d. Name a line in plane V. (more than one correct) $\overleftrightarrow{RQ}$ or $\overleftrightarrow{QS}$ or line f, etc.

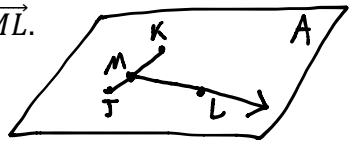
d. Name a line not in plane V. $\overleftrightarrow{WQ}$ or $\overleftrightarrow{QW}$

e. Name the intersection of two drawn in lines. Q

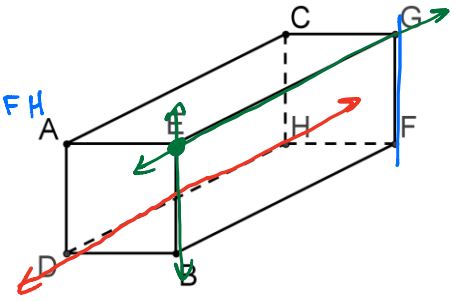
f. Name a point that is noncoplanar with R, S, and T. W

g. Name two opposite rays. $\overrightarrow{QR}$ and $\overrightarrow{QS}$

9. Draw plane A. Draw three noncollinear points J, K, and L in plane A. Draw $\overline{JK}$ and add a point M between J and K. Then draw $\overrightarrow{ML}$.



10. Use the diagram at the right to answer the following.



a. Name the intersection of plane ACH and plane FBD. $\overleftrightarrow{DH}$

b. Name two planes that intersect at $\overleftrightarrow{GF}$. Plane GFB and Plane GFH

c. Name the intersection of $\overleftrightarrow{EB}$ and $\overleftrightarrow{GE}$. E

d. True or False: Points A, C, and F are coplanar.

True (Any 3 points are always coplanar, even if the plane isn't drawn)

e. True or False: Plane ACE intersects plane DHB.

False (top of the box and bottom of the box are supposed to be parallel

11. Mike made an error solving this problem. His work is shown below.
Original Instructions: Point F is between G and M on $\overline{GM}$. Use the given information to determine the length of $\overline{FM}$. You are given: $GM = 5x - 3; FG = 8; FM = 3x + 3$

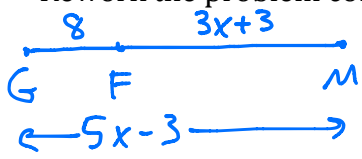
$5x-3+3x+3=8$
$8x=8$
$x=1$

$3(1)+3$
$=3+3$
$FM=6$

a. Describe Mike's error(s).

He added the wrong segments.
He did $5x-3+3x+3=8$ instead of doing $8+3x+3=5x-3$

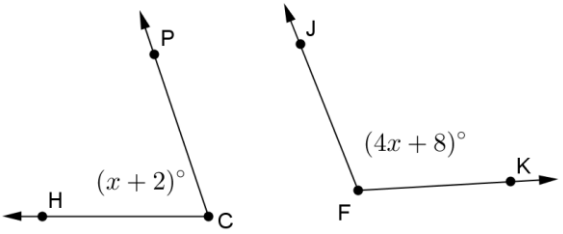
b. Rework the problem correctly.



$FM=3(7)+3$
$=21+3$
$FM=24$

$GF+FM=GM$
$8+3x+3=5x-3$
$3x+11=5x-3$
$-3x \quad -3x$
$11=2x-3$
$+3 \quad +3$
$\frac{14}{2}=\frac{2x}{2}$
$7=x$

12. Venny made a mistake solving this problem. His work is shown below.
Original instructions: You are given that $\angle HCP$ and $\angle JFK$ are supplementary. What is $m\angle PCH$?



$x+2+4x+8=90$
$5x+10=90$
$5x=80$
$x=16$

$16+2$
$m\angle PCH=18°$

a. Describe Venny's error(s).

He thought supplementary meant the angles add up to 90°.
Supplementary actually means the angles add up to 180°.

b. Rework the problem correctly.

$m\angle HCP+m\angle JFK=180°$
$x+2+4x+8=180$
$5x+10=180$
$-10 \quad -10$
$\frac{5x}{5}=\frac{170}{5}$
$x=34$

$m\angle PCH=34+2$
$m\angle PCH=36°$

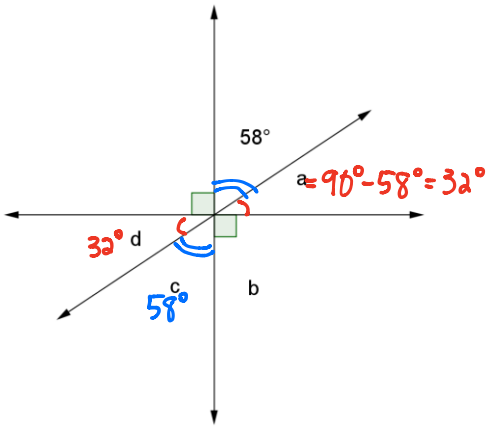
13. Use the diagram to the right for question 13.

a. Find $m\angle d$ $= 32°$

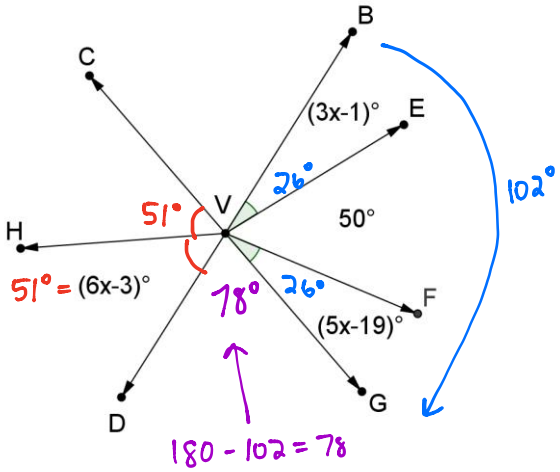
b. Find $m\angle c + m\angle b = 58° + 90° = 148°$

c. What term is used to describe $\angle d$ & $\angle c$?
Complementary (also adjacent)

d. What term is used to describe $\angle a$ & $\angle d$?
Vertical angles (also congruent)



14. In addition to the markings on the drawing, the following statements are given:
C, V, and G are collinear
$\angle DVH$ and $\angle HVB$ are a linear pair
$\overrightarrow{VH}$ is an angle bisector of $\angle CVD$
$m\angle BVG = 102°$



$3x-1 = 5x-19$ or $3x-1+50+5x-19 = 102$
$18 = 2x$ $8x+30 = 102$
$9 = x$ $8x = 72$
$x = 9$

Find the indicated values.

a. $x =$ 9

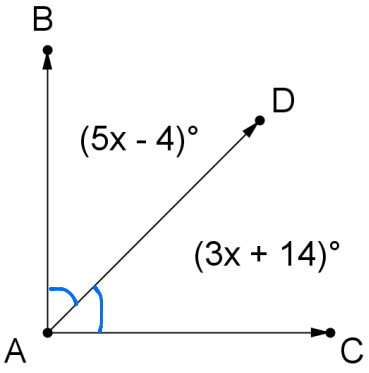
b. $m\angle BVE =$ 26° $3(9)-1 = 26$

c. $m\angle DVC =$ 102° $6(9)-3 = 51$

d. $m\angle DVF =$ 104° $78+26$

15. Sally solved the following question incorrectly. Her work is shown below:

If $\overrightarrow{AD}$ is an angle bisector of $\angle BAC$, find the value of x. Then find $m\angle BAD$.



$5x - 4 + 3x + 14 = 90$
$8x + 10 = 90$
$-10 \quad -10$
$\frac{8x}{8} = \frac{80}{8}$
$x = 10$
$m\angle BAD = 5(10) - 4 = 50 - 4 = 46°$

a. Describe the error Sally made.

Sally assumed the angles are complementary which they are not, she should have used the fact that the angles are congruent from the angle bisector

b. Solve the problem correctly.

$m\angle BAD = m\angle DAC$
$5x - 4 = 3x + 14$
$-3x \quad -3x$
$2x - 4 = 14$
$+4 \quad +4$
$\frac{2x}{2} = \frac{18}{2}$
$x = 9$
$m\angle BAD = 5(9) - 4 = 41°$