Chapter 1 Test Review

1. Use the figure to the right to answer the following questions.
(a) Name a line that contains point A.

$\overleftrightarrow{AB}$, $\overleftrightarrow{AC}$ $\overleftrightarrow{BC}$ or Line ℓ
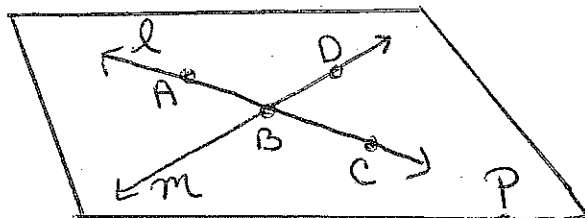
(b) Name a point not on line AC.

• D

(c) Name the intersection of line AC and line DB.

• B

(d) Name a pair of opposite rays.

$\overrightarrow{BA}$ and $\overrightarrow{BC}$

2. Use the figure to the right to answer the following questions.
(a) How many planes are in the figure?
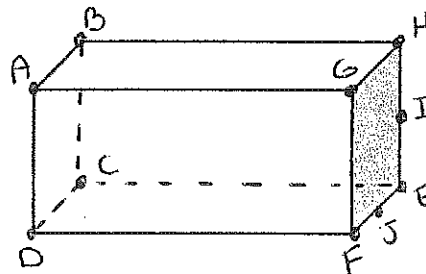
6

(b) Are points B, E, G, and H coplanar?

NO

(c) Name a point coplanar with points D, C, and E.

• F or • J

(d) Name the intersection of plane ABC and plane JDC.

$\overleftrightarrow{DC}$

3. Decide whether the statement is true or false.
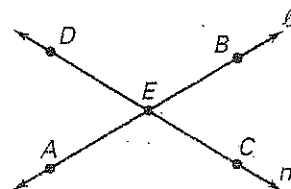(a) Point C lies on line l.   F

(b) Point E lies on segment AB.   T
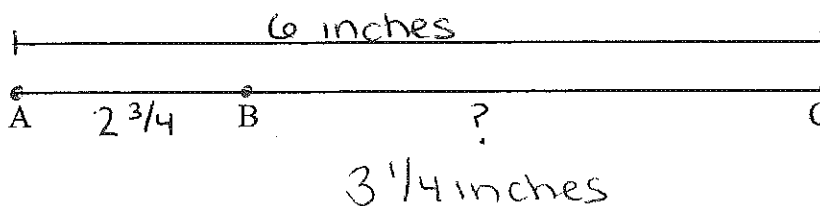
(c) Points D, A, and B are collinear.   F

(d) Points D, A, and B are coplanar.   T

(e) Point C lies on line m.   T
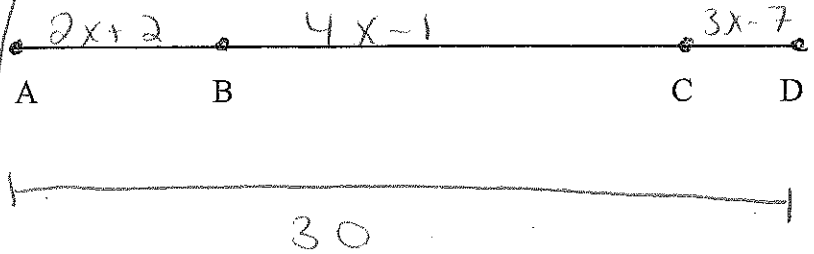
(f) Line l and m intersect at point E.   T

4. Find the length of BC.

6 inches

A   2 ¾   B   ?   C

3 ¼ inches

5. Find the length of each segment.

$AD = 30$
$AB = 2x + 2$
$BC = 4x - 1$
$CD = 3x - 7$

	Final answer
30	30
2(4)+2 =	10
4(4)-1 =	15
3(4)-7 =	5

Diagram: A •—— $2x+2$ ——• B ——— $4x-1$ ——— • C —— $3x-7$ —• D

Bracket below = 30

$2x + 2 + 4x - 1 + 3x - 7 = 30$

$9x - 6 = 30$

$ +6 \quad +6$

$\dfrac{9x}{9} = \dfrac{36}{9}$

$\boxed{x = 4}$

6. Find the value of the variable and KL if K is between J and L.

$JK = 6r \qquad KL = 3r \qquad JL = 27$

27

Diagram: J •— 6r —• K — 3r —• L
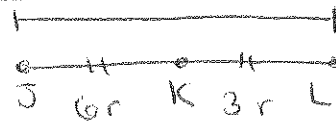
$JK + KL = JL$

$6r + 3r = 27$

$\dfrac{9r}{9} = \dfrac{27}{9}$

$\boxed{r = 3 \quad \text{and} \quad KL = 3(3) = 9}$

7. If B bisects AC, find x.

2 congruent parts

Diagram: A •—— 14 ——• B — $3x-4$ —• C with $4x+4$ across top

$\overline{AB} = \overline{BC}$

$14 = 3x - 4$

$+4 \qquad +4$

$\dfrac{18 = 3x}{3 \qquad 3}$

$\boxed{6 = x}$
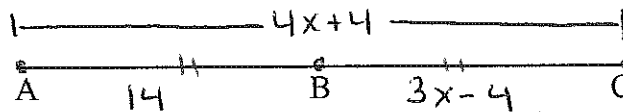
8. Use the number line below to answer the questions

Number line: A at -9, B at -7, C at -4, D at -2, E at 0, F at 2, G at 4 (labeled marks -10, -8, -6, -4, -2, 0, 2, 4, 6)
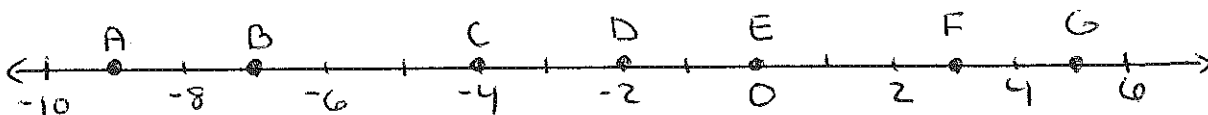
(a) Find the following measures: $\overline{BG} = 12$ units $\qquad \overline{DG} = 7$ units $\qquad \overline{AG} = 14$ units

(b) Find the coordinate of the midpoint of the following:

$\overline{BF} = \dfrac{-7 + 3}{2} = \dfrac{-4}{2}$ → $\boxed{-2}$

$\overline{AD} = \dfrac{-9 + (-2)}{2} = \dfrac{-11}{2}$ → $\boxed{-5.5}$

$\overline{CF} = \dfrac{-4 + 3}{2} = \dfrac{-1}{2}$ → $\boxed{\dfrac{-1}{2}}$

$$a^2 + b^2 = c^2$$

9. Find the distance between each pair of points. Round your answer to the nearest hundredth.

(a) $MN = (2)^2 + (5)^2 = c^2$

$4 + 25 = c^2$

$29 = c^2$

$\sqrt{29} = \sqrt{c^2}$

$\boxed{C = 5.39}$

(b) $OP = (1)^2 + (6)^2 = c^2$

$1 + 36 = c^2$
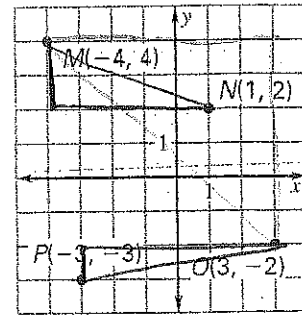
$37 = c^2$

$\sqrt{37} = \sqrt{c^2}$

$\boxed{C = 6.08}$

(c) $MO = (7)^2 + (6)^2 = c^2$

$49 + 36 = c^2$

$85 = c^2$

$\sqrt{85} = \sqrt{c^2}$

$\boxed{C = 9.22}$

$M(-4, 4)$
$N(1, 2)$
$P(-3, -3)$ $O(3, -2)$

10. Use the distance formula to find the distance between each pair of points.

(a) $L(-7, 0)$ and $Y(5, 9)$
$x_1 y_1$ $x_2 y_2$

$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ ← FORMULA

$\sqrt{(5 - (-7))^2 + (9 - 0)^2}$

$\sqrt{(12)^2 + (9)^2}$

$\sqrt{144 + 81}$

$\sqrt{225}$ $\boxed{15}$

(b) $A(0, 0)$ and $B(15, 20)$
$x_1 y_1$ $x_2 y_2$

$\sqrt{(15 - 0)^2 + (20 - 0)^2}$

$\sqrt{225 + 400}$

$\sqrt{625}$

$\boxed{25}$

11. Find the coordinates of the midpoint of a segment with the given endpoints.

(a) $A(7, 3)$ and $B(9, -1)$
$x_1 y_1$ $x_2 y_2$

$\left(\dfrac{7+9}{2}, \dfrac{3+(-1)}{2}\right)$

$\left(\dfrac{16}{2}, \dfrac{2}{2}\right)$

$\boxed{M = (8, 1)}$

$\left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2}\right)$

↑ FORMULA

(b) $A(12, 5)$ and $B(3, -3)$
$x_1 y_1$ $x_2 y_2$

$\left(\dfrac{12+3}{2}, \dfrac{5+(-3)}{2}\right)$

$\left(\dfrac{15}{2}, \dfrac{2}{2}\right)$

$\boxed{M = (7.5, 1)}$

12. Find the coordinate of endpoint B given endpoint A and midpoint M.

(a) $A(6, 2)$ and $M(2, 0)$ $B(x_2, y_2)$
$x_1 y_1$ $m_1 m_2$

(b) $A(-2, 5)$ and $M(4, -3)$ $B(x_2, y_2)$
$x_1 y_1$ $m_1 m_2$

FORMULA: $m_1 = \dfrac{x_1 + x_2}{2}$

$m_2 = \dfrac{y_1 + y_2}{2}$

(a)
$2 = \dfrac{6 + x_2}{2}$

$4 = 6 + x_2$

$-6 \quad -6$

$-2 = x_2$

$0 = \dfrac{2 + y_2}{2}$

$0 = 2 + y_2$

$-2 \quad -2$

$-2 = y_2$

$\boxed{B(-2, -2)}$

(b) $4 = \dfrac{-2 + x_2}{2}$

$8 = -2 + x_2$

$+2 \quad +2$

$10 = x_2$

$-3 = \dfrac{5 + y_2}{2}$

$-6 = 5 + y_2$

$-5 \quad -5$

$-11 = y_2$

$\boxed{B(10, -11)}$

13. Draw an obtuse angle and label it with vertex B, and with sides BX and BZ.

X

B   Z
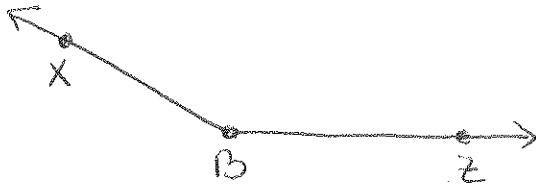
14. <A and <T are complimentary. The measure of <T is three times the measure of <A. What is the measure of <A?   2 ∡'s = 90°

Define unknown

<A = x

<T = 3x

$\angle A + \angle T = 90°$

$x + 3x = 90'$

$4x = 90°$

$x = 22.5$

<A measures 22.5°

15. Angle B and Angle C are complementary. Find A, B, and C.

A = 4x
B = 3x
C = 2x + 15

$\angle B + \angle C = 90°$

$3x + 2x + 15 = 90$

$5x + 15 = 90$

$ -15 \quad -15$

$\dfrac{5x}{5} = \dfrac{75}{5}$

$x = 15$

$A = 4(15)$
$ 60°$

$B = 3(15)$
$ 45°$

$C = 2(15) + 15$
$ 45°$

16. Suppose <P is a supplement of <Q. Find the value of x, m<P, and m<Q if m<P = 11x + 2 and m<Q = 8x + 7

2 ∡'s Add up to 180°

$11x + 2 + 8x + 7 = 180°$

$19x + 9 = 180°$

$ -9 \quad -9$

$\dfrac{19x}{19} = \dfrac{171}{19}$

$x = 9$

$m<P = 11(9) + 2$
$\phantom{m<P =} 99 + 2$
$\phantom{m<P =} 101°$

$m<Q = 8(9) + 7$
$\phantom{m<Q =} 72 + 7$
$\phantom{m<Q =} 79°$

17. Find m<T if m<T is twenty more than four times its supplement.

<T : 4x + 20

Supplement : x

$4x + 20 + x = 180°$

$5x + 20 = 180$

$ -20 \quad -20$

$\dfrac{5x}{5} = \dfrac{160}{5}$

$m<T = 4(32) + 20$
$\phantom{m<T =} 148°$

$x = 32$

18. BD bisects <ABC. Find m<ABC.

$5x + 2 = 7x - 6$
$-5x \qquad -5x$
_____
$2 = 2x - 6$
$+6 \qquad +6$
_____
$\dfrac{8}{2} = \dfrac{2x}{2}$

$4 = x$
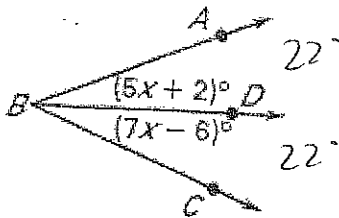
m<ABD =
$5(4) + 2$
(22)

m<ABC = 44°

19. Given m<ADC = 135*, find m<BDC.

$7x + 11x + 9 = 135$

$18x + 9 = 135$
$\qquad -9 \qquad -9$
_____
$\dfrac{18x}{18} = \dfrac{126}{18}$

$x = 7$
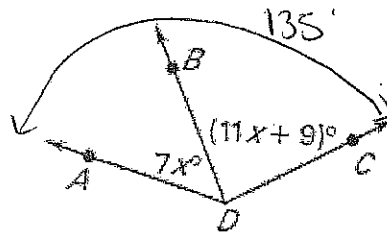
m<BDC = $11x + 9$
$11(7) + 9$
$77 + 9$
$86°$

20. Solve for x and y.

Vertical angles
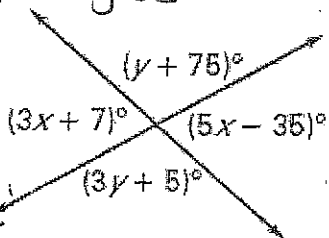
Solve for y:

$y + 75 = 3y + 5$
$-y \qquad -y$
_____
$75 = 2y + 5$
$-5 \qquad -5$
_____
$\dfrac{70}{2} = \dfrac{2y}{2}$ [35 = y]

Solve for x:

$3x + 7 = 5x - 35$
$-3x \qquad -3x$
_____
$7 = 2x - 35$
$+35 \qquad +35$
_____
$\dfrac{42}{2} = \dfrac{2x}{2}$ [21 = x]

21. Solve for x and y.

$(6x - 11)°$ $(20y + 19)°$
$6(25) - 11$
$139°$
$(2x - 9)° = 41°$
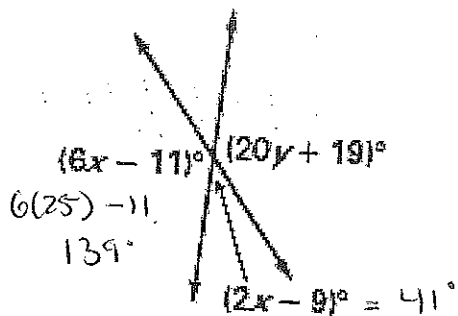
Find X first – Linear Pair
_____
$6x - 11 + 2x - 9 = 180°$
$8x - 20 = 180°$
$+20 \qquad +20$
_____
$\dfrac{8x}{8} = \dfrac{200}{8}$
[X = 25°]

Now find y:
$20y + 19 = 6x - 11$
$20y + 19 = 6(25) - 11$
$20y + 19 = 139°$ [y = 6]
$-19 \qquad -19$

22. Solve for x and y.

112°

16x°

4y°   (9x + 5)°

68°
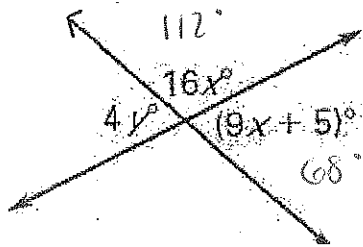
Find x 1st → linear pair

$16x + 9x + 5 = 180$

$25x + 5 = 180$

$ -5 \quad -5$

$25x = 175$

$\dfrac{25x}{25} = \dfrac{175}{25}$

$\boxed{x = 7}$

Find y: $4y = 9x + 5$

$4y = 9(7) + 5$

$4y = 68$

$\dfrac{4y}{4} = \dfrac{68}{4}$ $\boxed{y = 17}$

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23. $\overrightarrow{BD}$ bisects <ABC. Find m<DBA.

A

D

$(9x - 23)°$

$(5x + 13)°$ B

C

$5x + 13 = 9x - 23$

$-5x \qquad\quad -5x$

$13 = 4x - 23$

$+25 \qquad +23$

$36 = 4x$

$\dfrac{36}{4} = \dfrac{4x}{4}$
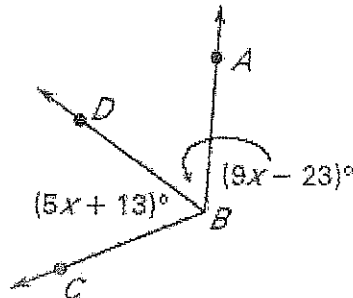
$9 = x$

$\boxed{m<DBA = 9(9) - 23 \\ \qquad\qquad 58°}$

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24. Solve for y.
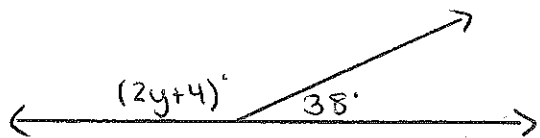
$(2y+4)°$ 38°

Linear Pair

$2y + 4 + 38 = 180$

$2y + 42 = 180$

$-42 \qquad -42$

$\dfrac{2y}{2} = \dfrac{138}{2}$

$\boxed{y = 69}$

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25. Given <NQR = 10x + 18. Find m<PRQ.

N

$10x + 18$

$(8x + 7)°$ P

R $(4x - 1)°$

Q
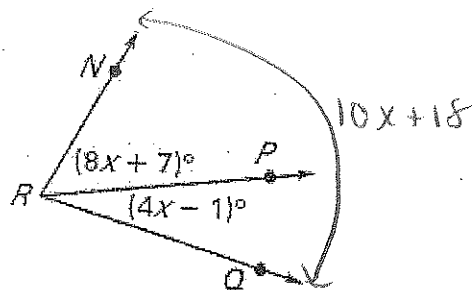
$8x + 7 + 4x - 1 = 10x + 18$

$12x + 6 = 10x + 18$

$-10x \qquad\qquad -10x$

$2x + 6 = 18$

$-6 \quad -6$

$\dfrac{2x}{2} = \dfrac{12}{2}$

$x = 6$

$\boxed{m<PRQ = 4(6) - 1 \\ \qquad\qquad 24 - 1 \\ \qquad\qquad 23}$