MATH 1
CHAPTER 6 REVIEW

NAME: SOLUTION

① FIND THE MIDPOINT OF THE SEGMENT JOINING THE POINTS (4, -2) AND (-8, 6)

$x: \frac{4+(-8)}{2} = \frac{-4}{2} = -2$

$y: \frac{-2+6}{2} = \frac{4}{2} = 2$

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

② FIND THE DISTANCE BETWEEN (3, -2) AND (6, 4) IN SIMPLEST RADICAL FORM.

$d = \sqrt{(3-6)^2 + (-2-4)^2} = \sqrt{(-3)^2 + (-6)^2} = \sqrt{9+36} = \sqrt{45} = 3\sqrt{5}$

45: 3, 15; 15: 3, 5

③ WHAT IS THE SLOPE OF THE LINE PASSING THROUGH (4, 6) AND (-1, -2)?

$m = \frac{-2-6}{-1-4} = \frac{-8}{-5} = \frac{8}{5}$

④ M IS THE MIDPOINT OF $\overline{AB}$. IF THE COORDINATES OF A ARE (-2, 3) AND THE COORDINATES OF M ARE (1, 0), FIND THE COORDINATES OF B.

$\boxed{B(4, -3)}$

⑤ THE POINT (-4, -2) LIES ON A CIRCLE. WHAT IS THE LENGTH OF THE RADIUS OF THE CIRCLE IF THE CENTER IS LOCATED AT (-8, -10)? EXPRESS ANSWER IN SIMPLEST RADICAL FORM.

$d = \sqrt{(-4-(-8))^2 + (-2-(-10))^2} = \sqrt{4^2 + 8^2} = \sqrt{16+64} = \sqrt{80}$

80: 2, 40; 40: 2, 20; 20: 2, 10; 10: 2, 5

$4\sqrt{5}$

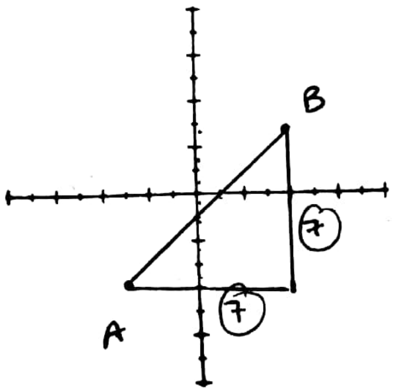
⑥ FIND THE SLOPE OF A LINE PERPENDICULAR TO $6x + 2y = 24$.

$m = \frac{-A}{B} = \frac{-6}{2} = -3$

$m_{\perp} = \frac{1}{3}$

(OPP. RECIPROCAL)

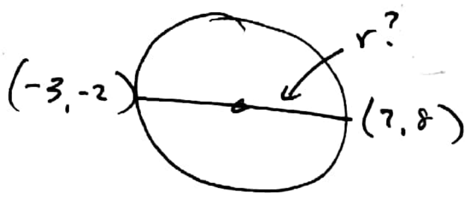
(7) FIND THE LENGTH OF $\overline{AB}$ IN SIMPLEST RADICAL FORM.



$$AB = \sqrt{7^2 + 7^2} =$$

$$\sqrt{49 + 49} = \sqrt{98} = \boxed{7\sqrt{2}}$$

(8) FIND THE RADIUS OF A CIRCLE WHOSE DIAMETER HAS ENDPOINTS (-3, -2) AND (7, 8). GIVE ANSWER IN SIMPLEST RADICAL FORM.



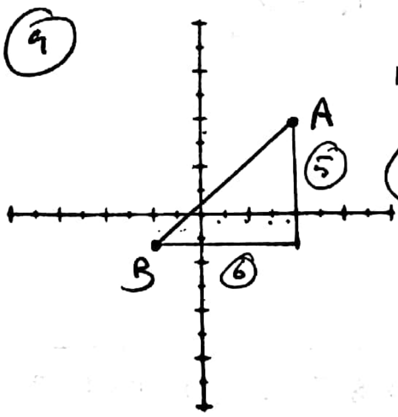
$$d = \sqrt{(7-(-3))^2 + (8-(-2))^2}$$

$$= \sqrt{10^2 + 10^2} = \sqrt{200} = 10\sqrt{2}$$

$$r = \frac{d}{2} = \frac{10\sqrt{2}}{2} = 5\sqrt{2}$$

(9) DETERMINE THE SLOPE OF THE LINE THAT IS PERPENDICULAR TO THE LINE SEGMENT.

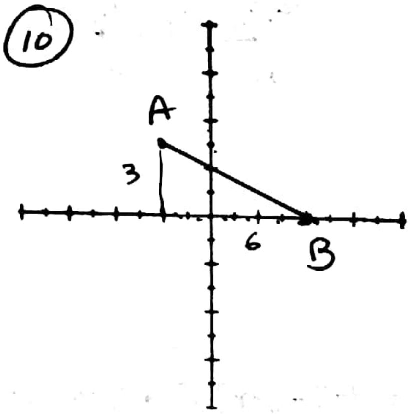
(9)



$$m = \frac{5}{6}$$

$$m_{\perp} = -\frac{6}{5}$$

(10)



(10) DETERMINE THE SLOPE OF THE LINE THAT IS PARALLEL TO THE LINE SEGMENT.

$$m = \frac{-3}{6} = -\frac{1}{2}$$

11. GIVEN $A(-3,2)$ AND $B(5,3)$, FIND:

A. THE MIDPOINT OF $\overline{AB}$.

$x: \frac{-3+5}{2} = \frac{2}{2} = 1 \quad y: \frac{2+3}{2} = \frac{5}{2}$ $\boxed{M(1, \frac{5}{2})}$

B. THE SLOPE OF $\overline{AB}$.

$m = \frac{3-2}{5-(-3)} = \frac{1}{8}$

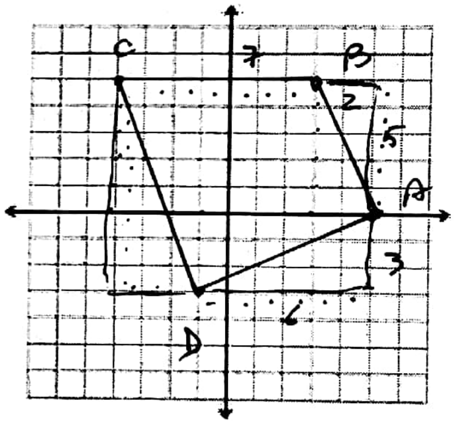
C. THE SLOPE OF ANY LINE PERPENDICULAR TO $\overline{AB}$.

$\boxed{m_{\perp} = -8}$

D. THE LENGTH OF $\overline{AB}$ TO THE NEAREST 10th.

$d = \sqrt{(-3-5)^2 + (2-3)^2} = \sqrt{(-8)^2 + (-1)^2} = \sqrt{64+1} = \sqrt{65} \approx 40.3$

12. GIVEN QUADRILATERAL ABCD WITH VERTICES $A(5,0)$, $B(3,5)$, $C(-4,5)$ AND $D(-1,-3)$, FIND THE PERIMETER TO THE NEAREST 10th.



CB: 7

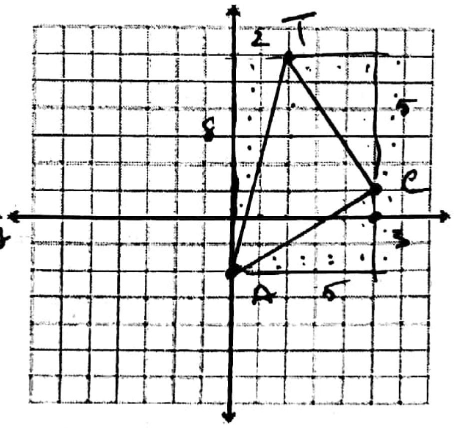
AB: $\sqrt{2^2+5^2} = \sqrt{29}$

AD: $\sqrt{3^2+6^2} = \sqrt{45}$

CD: $\sqrt{3^2+8^2} = \sqrt{73}$

$P = 7 + \sqrt{29} + \sqrt{45} + \sqrt{73} \approx 27.6$

13. GIVEN $\triangle CAT$ WITH VERTICES $A(0,-2)$, $C(5,1)$, AND $T(2,6)$.



A. FIND THE PERIMETER OF $\triangle CAT$ TO THE NEAREST 10th.

CA: $\sqrt{5^2+3^2} = \sqrt{34}$. AT: $\sqrt{8^2+2^2} = \sqrt{68}$

CT: $\sqrt{5^2+3^2} = \sqrt{34}$ 19.9

B. FIND THE AREA TO THE NEAREST 10th.

$A = \frac{1}{2}\sqrt{34}\sqrt{34} = \frac{1}{2}(34)$
$= 17$

(14) THE SUM OF 3 CONSECUTIVE INTEGERS IS 36. WHAT IS THE LARGEST OF THE 3 NUMBERS?

x
$x+1$
$x+2$

$x + (x+1) + (x+2) = 36$

$3x + 3 = 36$

$3x = 33$

$x = 11$

13

(15) 5 TIMES THE SMALLEST OF 3 CONSECUTIVE ODD INTEGERS IS 7 MORE THAN TWICE THE LARGEST. FIND THE LARGEST INTEGER.

x
$x+2$
$x+4$

$x = 7 + 2(x+4)$

$x = 7 + 2x + 8$

$x = 15 + 2x$ → $-x = 15$

$x = -15$

-11

(16) THE PRODUCT OF 2 CONSECUTIVE ODD POSITIVE (+) INTEGERS IS 323. WHAT IS THE SUM OF THE 2 INTEGERS?

x
$x+2$

$x(x+2) = 323$

$x^2 + 2x - 323 = 0$

$(x+19)(x-17) = 0$

$x = -19 \quad x = 17$

17, 19

323
17 19

(17) SOLVE

$$\begin{array}{r} x - 2y = 5 \\ 3x + 2y = 15 \\ \hline 4x = 20 \end{array}$$

$\frac{4x}{4} = \frac{20}{4}$

$x = 5$

$$\begin{array}{r} 5 - 2y = 5 \\ -5 \quad\quad -5 \\ \hline -2y = 0 \end{array}$$

$y = 0$

$\boxed{(5, 0)}$

(18) SOLVE USING SUBSTITUTION:

$x = y + 2$

$-3x + 2y = 15$

$-3(y+2) + 2y = 15$

$-3y - 6 + 2y = 15$

$-y - 6 = 15$

$-y = 21$

$y = -21$

$x = -21 + 2 = -19$

$\boxed{(-19, -21)}$