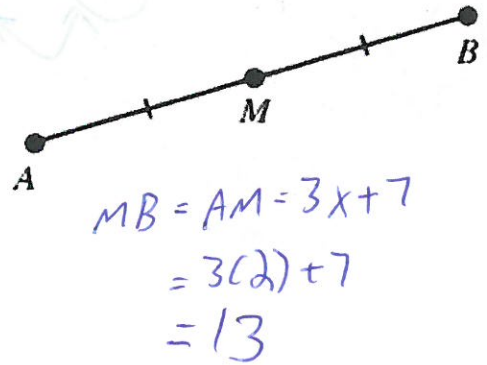Name: MR. SCEVOLA          Period: _____     Date: 9/20/14
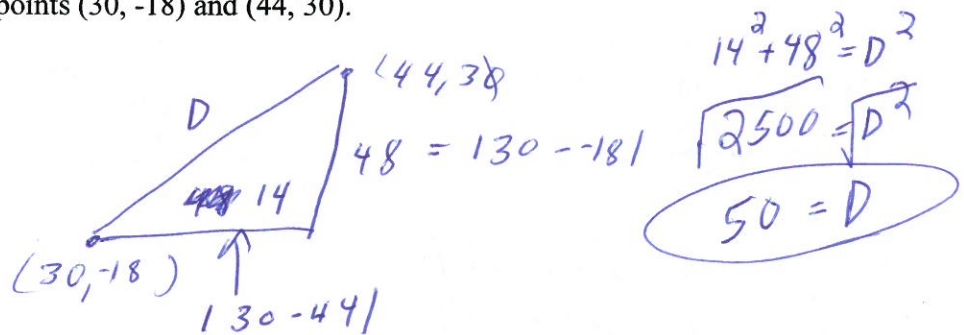
Geometry: Midpoint and Distance Homework

1. Find the length of MB if AM = 3x + 7 and AB = 14x − 2.
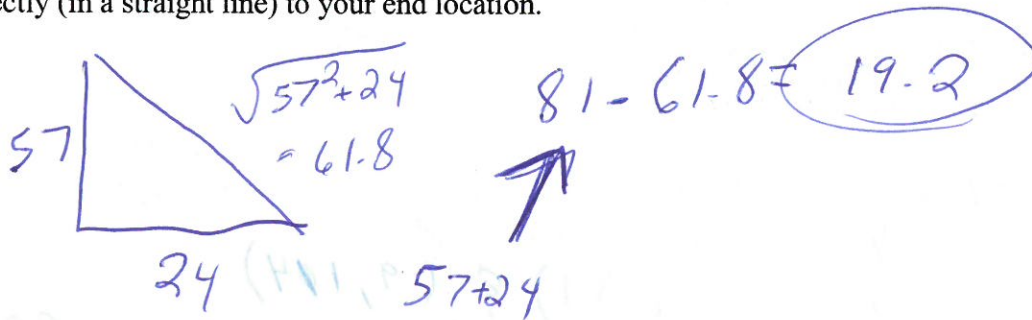
$$2AM = AB$$
$$2(3x+7) = 14x-2$$
$$6x+14 = 14x-2$$
$$-6x \quad +2 \quad -6x+2$$
$$\frac{16}{8} = \frac{8x}{8} \qquad x=2$$



$$MB = AM = 3x+7$$
$$= 3(2)+7$$
$$= 13$$

2. Find the distance between the points (30, -18) and (44, 30).

$$(44, 30)$$
D
$$48 = |30 - -18|$$
14
$$(30, -18)$$
$$|30 - 44|$$

$$14^2 + 48^2 = D^2$$
$$\sqrt{2500} = \sqrt{D^2}$$
$$50 = D$$

3. If you set out to sail 57 miles south and 24 miles west, how much extra sailing did you do compared to if you sailed to directly (in a straight line) to your end location.

57
$$\sqrt{57^2+24}$$
$$= 61.8$$
$$81 - 61.8 = 19.2$$
24          57+24

4. Describe and correct the error for finding the distance between (6, 2) and (1, -4).

✗

$$AB = (6-1)^2 + [2-(-4)]^2$$
$$= 5^2 + 6^2$$
$$= 25 + 36$$
$$\sqrt{} = 61$$

✗  $AB = \sqrt{(6 - 2)^2 + [1 - (-4)]^2}$

$\quad = \sqrt{4^2 + 5^2}$

$\quad = \sqrt{16 + 25}$

$\quad = \sqrt{41}$

$\quad \approx 6.4$

5. **HOW DO YOU SEE IT?** $\overline{AB}$ contains midpoint $M$ and points $C$ and $D$, as shown. Compare the lengths. If you cannot draw a conclusion, write *impossible to tell*. Explain your reasoning.



A          C          M          D          B

a. $AM$ and $MB$    $AM = MB$

b. $AC$ and $MB$    $AC < MB$

c. $MC$ and $MD$    impossible

d. $MB$ and $DB$    $MB > DB$

6. Find the midpoint between the points (your birth month digit, last two digits of your birth year) and (today's month, last two digits of today's year).

$(6, 89)$ & $(9, 104)$

$\left( \dfrac{6+9}{2}, \dfrac{89 + 114}{2} \right)$  →  Jan 2002

$(7.5, 101.5)$

7. Find the distance and midpoint between the points (35, -147) and (-76, 102).

$M = \left( \dfrac{-41}{2}, \dfrac{-45}{2} \right)$

$(-76, 102)$



111

249

$(35, -147)$

$D^2 = 111^2 + 249^2$

$D^2 = 74322$

$D = 272.6$