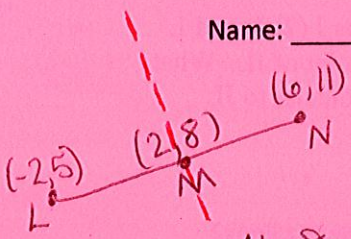
Unit 3 & Unit 5

Cut & Paste the right answer beside the problem.

Name: KEY

1.) A line segment has endpoints L(-2, 5) and N(6, 11). The point M is the midpoint of LN. What is an equation of a line perpendicular to LN and passing through M?



Slope $= \frac{5-11}{-2-6} = \frac{-6}{-8} = \frac{3}{4}$

Slope $\perp = -\frac{4}{3}$

$y - 8 = -\frac{4}{3}(x-2)$

$y = -\frac{4}{3}x + \frac{8}{3} + 8$

$y = -\frac{4}{3}x + \frac{32}{3}$

2.) What is true about the following lines?

i. The line going through the points (4, 5) and (4, -7) $m = \frac{5+7}{4-4} = \frac{12}{0}$ = Undefined

ii. The line going through the points (-2, -4) and (-2, 6) $m = \frac{-4-6}{-2+2} = \frac{-10}{0}$ = Undefined

Same slope

They are parallel.

They are parallel.

3.) (No Calculator) The Athletic Boosters sells t-shirts to raise money for the prom. The profit from sales of 20 short sleeve t-shirts and 50 long sleeve t-shirts is $215. Profit from sales of 10 short sleeve t-shirts and 40 long sleeve t-shirts is $160. How much profit do they earn for each long sleeve t-shirt sale?

Elimination

$20S + 50L = 215$

$-2(10S) - 2(40L) = -2(160)$

$20S + 50L = 215$

$-20S - 80L = -320$

$30L = -105$

$L = \$3.50$

3.50

4.) (No Calculator) The sum of twice Patty's age and her mother's age is 74. Her mother's age is 14 more than three times Patty's age. What is Patty's age?

$2P + M = 74$ Substitution

$M = 3P + 14$

$2P + 3P + 14 = 74$

$5P = 60$

$P = 12$

12

5.) Josephine sold 93 tickets to a school play and collected a total of $341. If the adult tickets cost $5 each and the child tickets cost $3 each, how many adult tickets did she sell?

money: $5A + 3C = 341$

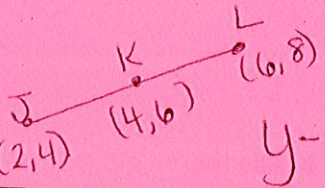
# of tickets $-3A - 3C = -279$

$2A = 62$

$A = 31$

31

6.) A line segment has endpoints J (2, 4) and L (6, 8). The point K is the midpoint of JL. What is the equation of a line perpendicular to JL passing through K?



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

Slope $\perp = -1$

$y - 6 = -1(x - 4)$

$y = -x + 4 + 6$

$y = -x + 10$

$y = -x + 10$

7.) What is true about the following lines?

i. The line going through the points (4, 5) and (4, -7)

$m = \frac{5 + 7}{4 - 4} = \frac{12}{0}$ = undefined

ii. The line going through the points (6, 3) and (-5, 3)

$m = \frac{3 - 3}{6 + 5} = \frac{0}{11} = 0$ slope

They are perpendicular.

They are perpendicular.

8.) Two pair of jeans and three shirts cost $133. The cost of 3 pair of jeans and six shirts is $231. Find the cost of each pair of each pair of jeans.

$-2(2J) + -2(3S) = -2(133)$

$3J + 6S = 231$

$-4J - 6S = -266$

$3J + 6S = 231$

$J = 35$

35

9.) (No Calculator) The sum of four times Emma's age and three times Anna's age is 47. Anna is one year less than twice as old as Emma. Find the age of Anna.

$4E + 3A = 47$

$A = 2E - 1$

$A = 2(5) - 1 = 9$

Anna = 9

$4E + 3(2E - 1) = 47$

$4E + 6E - 3 = 47$

$10E = 50$

$E = 5$

9

10.) (No Calculator) SSHS Band Department sold adult tickets for $5 and student tickets for $2. They sold a total of 202 tickets and collected a total of $764. How many adult tickets did they sell?

$5A + 2S = 764$

$-2A + -2S = -404$

$3A = 360$

$A = 120$

120