

Things you need to know for the test:

1. Find the slope of a line segment (including slope of parallel and perpendicular lines)
2. Determine the length of a line segment
3. Midpoint of a line segment
4. Be able to graph from a) a table b) using slope, y-intercept c) using x and y intercepts
5. Determine equation of a line given a) slope and a point b) 2 points
6. Know the definitions of median, altitude, perpendicular bisector and can find the equations of these lines
7. Can determine equations of vertical and horizontal lines
8. Can convert between slope intercept form and standard form of equation of lines
9. Know the properties of triangles and quadrilaterals

Some review questions for you to practice.

1. Quick questions and facts !
 - a) Is the y-intercept always on the y-axis? _____
 - b) Which point can be both the x and the y-intercept of a relation? _____
 - d) The slope-y intercept form of a linear relation is _____.
 - e) A vertical line has a slope that is _____.
 - f) A line has a slope of 4. A perpendicular line would have a slope of _____.
 - g) What is the equation of the x-axis? _____.
 - h) At what angle to the horizontal is the line where $y = x$? _____.
 - i) What is the mid-point of the line segment between $(-4, -3)$ and $(2, -3)$? _____
2. Graph the following equations on the same set of axes using the slope and y-intercept for one and a table of values for the other. How can you tell that they are perpendicular to each other.

A. $y = -2x + 6$ B. $y = \frac{1}{2}x + 2$
3. Calculate the slopes between each set of points below.

A) $(4, -6)$ and $(-6, 1)$ b) $(-5, 7)$ and $(4, 1)$ c) $(3, -5)$ and $(4, -5)$ d) $(-3, 7)$ and $(-3, 1)$.
4. Determine perpendicular slopes to the slopes listed.

a) $-\frac{3}{5}$ b) 5 c) $-\frac{1}{4}$ d) $\frac{5}{8}$ e) -3
5. Determine the equation of the lines with the given information.
 - a) going through the points $(3, -4)$ and $(-1, 8)$.
 - b) parallel to $y = 3x - 4$ and through the point $(8, 3)$
 - c) perpendicular to $y = -\frac{3}{4}x + 5$ and through the point $(6, 3)$
6. Graph the equations $y=5$ and $x=-3$ on the same set of axes.

ANALYTIC GEOM. STRAND REVIEW

SOLN

- 1/ A) Y-INT IS ALWAYS ON Y-AXIS.
 B) THE ORIGIN CAN BE BOTH AN X- AND Y-INT.
 C) $y = mx + b$ IS THE "USEFUL" FORM OF A LINE.
 D) SLOPE Y-INT. FORM OF A LIN. RELATION IS $y = mx + b$.
 E) VERTICAL LINES HAVE UNDEFINED SLOPES.
 F) A LINE \perp TO ONE WITH A SLOPE OF 4 WOULD HAVE A SLOPE OF $-1/4$.
 G) THE EQN OF THE X-AXIS IS $y = 0$.
 H) $y = x$ HAS AN ANGLE OF 45° TO THE HORIZ.
 I) THE MIDPOINT OF $(-4, -3)$ AND $(2, -3)$ IS $(-1, 3)$.

- 4/ A) $-3/3 \rightarrow 5/3$
 B) $5 \rightarrow -1/5$
 C) $-1/4 \rightarrow 4$
 D) $5/8 \rightarrow -8/5$
 E) $-3 \rightarrow 1/3$

2, SEE GRAPH PAPER.

- 3/ A) $m = \frac{-6-1}{4+6} = \frac{-7}{10}$ C) $\frac{-5+5}{3-4} = 0$
 B) $m = \frac{7-1}{-5-4} = \frac{6}{-9} = -\frac{2}{3}$ D) $\frac{7-1}{-3+3} = \text{UNDEF.}$

4/ $m = \frac{8+4}{-1-3} = \frac{12}{-4} = -3$

$y = -3(x-3) - 4$
 $y = -3x + 9 - 4$
 $y = -3x + 5$

B) $y = 3(x-8) + 3$
 $y = 3x - 24 + 3$
 $y = 3x - 21$

C) $y = \frac{4}{3}(x-6) + 3$
 $y = \frac{4}{3}x - 8 + 3$
 $y = \frac{4}{3}x - 5$

6, SEE GRAPH PAPER.

7/ A) $y = 3x + 5$
 $3x - y + 5 = 0$

B) $y = -\frac{2}{5}x - 5$
 $5y = -2x - 25$
 $2x + 5y + 25 = 0$

9/ A) $M_{AB} = \left(\frac{4+0}{2}, \frac{-3-5}{2} \right)$
 $= (2, -4)$

8/ A) $-9x + 3y - 12 = 0$
 $3y = 9x + 12$
 $y = 3x + 4$

B) $3x - 2y + 5 = 0$
 $2y = 3x + 5$
 $y = \frac{3}{2}x + \frac{5}{2}$

B) $d_{AB} = \sqrt{(4-0)^2 + (-3-5)^2}$
 $= \sqrt{16 + 64}$
 $= \sqrt{80} = 20$
 $= 4\sqrt{5}$

10/ A) RIGHT Δ HAS ONE 90° ANGLE WHERE 2 \perp EDGES MEET.

B) ISOSCELES Δ HAS TWO SIDES THE SAME LENGTH AND TWO EQUAL ANGLES.

C) \parallel GRAM HAS OPPOSITE SIDES SAME LENGTH, OPPOSITE ANGLES EQUAL, DIAGONALS BISECT EACH OTHER.

D) QUADRILATERAL IS ANY 4-SIDED CLOSED FIGURE, ANGLES SUM TO 360°

E) A RHOMBUS IS A \parallel GRAM WITH 4 EQUAL SIDES, DIAGONALS ARE \perp BISECTORS.

ANALYTIC GEOM. STRAND REVIEW

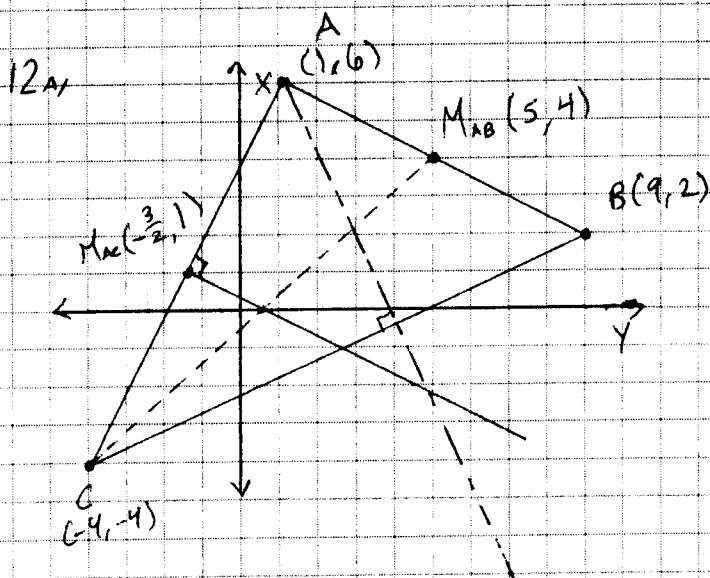
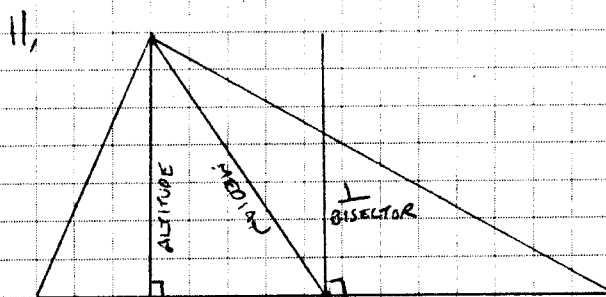
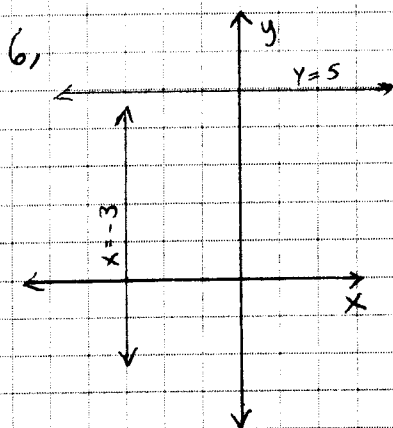
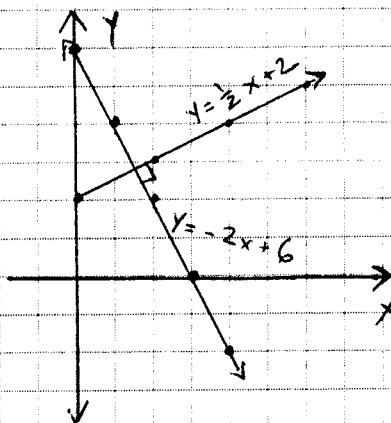
SOLN

2) $y = -2x + 6$
 SLOPE IS -2
 Y-INT. IS 6

$y = \frac{1}{2}x + 2$

x	y
0	2
2	3
4	4
6	5

LINES ARE \perp
 BECAUSE SLOPES ARE
 NEGATIVE RECIPROALS.



$M_{AB} = (5, 4)$
 Bi) $M_{CM_{AB}} = \frac{8}{9}$
 $y = \frac{8}{9}(x - 5) + 4$
 $y = \frac{8}{9}x - \frac{40}{9} + 4$
 $y = \frac{8}{9}x - \frac{4}{9}$ OR $8x - 9y - 4 = 0$

ii) $M_{AC} = (-\frac{3}{2}, 1)$
 $m_{AC} = 2$
 $m_{\perp} = -\frac{1}{2}$
 $y = -\frac{1}{2}(x + \frac{3}{2}) + 1$
 $y = -\frac{1}{2}x - \frac{3}{4} + 1$
 $y = -\frac{1}{2}x + \frac{1}{4}$ OR $2x + 4y - 1 = 0$

13a) MEDIANS MEET AT THE CENTROID.

b) \perp BISECTORS MEET AT THE CIRCUMCENTRE

c) ALTITUDES MEET AT THE ORTHOCENTRE

iii) $m_{BC} = \frac{6}{13}$
 $m_{\perp} = -\frac{13}{6}$
 $y = -\frac{13}{6}(x - 1) + 6$
 $y = -\frac{13}{6}x + \frac{13}{6} + 6$
 $y = -\frac{13}{6}x + \frac{49}{6}$ OR $13x + 6y - 49 = 0$