

There are two lessons for class 11b. you are to do lesson B if your name is listed below. if your name is not listed below you are to do lesson A.

The following students are to complete this: lesson B

Beckerman, Federman, Perlow, Schechter

coordinate geometry lesson B

learning intention: how to find the distance between two points on a graph; using a ruler and using a formula.

materials: for this lesson students will need calculator/with manual, graph paper(preferable centimeters) and ruler

you are to use your barron's textbook page 99 for this lesson. if you do not have the barron's than i have attached a copy below starting with the attachment of the left.

starting on page 99, you with notice the distance formula, if you are given two points on a graph, for example (7,12) and the other point (10,16), you can find the distance between the points.

using the distance formula, you first:

- i. subtract the **x** values: $10 - 7 = 3$
- ii. subtract the **y** values: $16 - 12 = 4$

now you *square* the differences in the values

- i. **3** squared = 9
- ii. **4** squared = 16

now you add the *squared* values

- i. $9 + 16 = 25$

final step you take the square root of the sum 25

$\text{SQRT}(25) = 5$ so the distance between points (7,12) and (10,16) is 5units

problem to summit: you can scan and summit your work: if you do not have a scanner answer the question below where is **said questions.**

- i. plot the above point: (7,12) (10,16) on your graph
- ii. on your graph draw the right triangle that is on page 99 of barron's or see

the below attachments: open the one on the left:

- a) on page 99 notice the *right triangle* with *run*
- b) on page 99 notice the *right triangle* with the *rise*

questions: |

1) what is the distance for the *run*? how do you calculate the run? *show your work*

2) what is the distance for the *rise*? how do you calculate the rise? *show your work*

3) is the distance formula on page 99 the same as pythagorus theorem?explain.

Next:

on page 99 notice the ***mid-point*** formula.

using the points above (7,12) and (10,16) we can find the mid-point between

(7,12) and (10,16).

i. add up the x values

a) $7 + 10 = 17$

b) divide the sum by 2: $17/2 = 8.5$

ii. add up the y values

a) $12 + 16 = 28$

b) divide the sum by 2: $28/2 = 14$

thus, the mid-point for points (7,12) and (10,16) is (8.5,14)

problem to submit: you can scan and submit your work: if you do not have a scanner answer the question at the bottom where is **said questions**.

on your graph find the mid-point and compare it to the value you just calculated above.

questions: II

1) the mid-point is really an average of the x and y values. explain why?

2) draw a line vertically down from the mid-point to the base of your right

triangle you drawn. are the two triangles similar? explain.

Next on page 99, "dividing a segment proportionally"

1) in this part, you are asked to divide a line into two parts: one part is one-third of the original length and other part of the line will be two-thirds of the original length: see page 99.

2) the problem want us to find the point on the line that divides the line into 2 parts; where one segment of the line is two-thirds long. meaning that somewhere on the line, there is this point (x,y) we are looking for. you need to find this point on the line that is going to divide the line into two pieces: for this problem, one piece of the line is $2/3$ and the other piece is of the line is $1/3$ of the original length.

follow these steps:

i. on your graph paper, plot the points given on page 99 $J(1,-2)$ and $K(11,3)$.

ii. now connect the points.

iii. use the ratio to find the x value: $(x - x_1) / (x_2 - x_1) = 2/3$
see page 100.

a) $(x - x_1) / (x_2 - x_1) = 2/3$ why two thirds? because one piece of the line is two thirds of the original length.

b) the x-values used on page 100 in the ratio equation, also known as a proportion, are take from the points $J(1,-2)$ and $K(11,3)$. following the calculation step on page 100 and solve for x.

iv. use the ratio equation, proportion, to find the y value: $(y - y_1) / (y_2 - y_1) = 2/3$ see page 100.

a) $(y - y_1) / (y_2 - y_1) = 2/3$ solve for y?

b) the y-values used on page 100 in the ratio are taken from the points $J(1, -2)$ and $K(11, 3)$.

problem to submit:

i. calculate the distance between points $J(1, -2)$ and $K(11, 3)$ using the distance formula from page 99. make a graph.

ii. calculate the mid-point between $J(1, -2)$ and $K(11, 3)$ using the mid-formula on page 99.

iii. for points $J(1, -2)$ and $K(11, 3)$, find the coordinate point $L(x, y)$ that divides line JK in a 2:5 ratio? hint following the same step on page 100.