GEOMETRY LESSON A WEEK 2 Mr. DINNALO

There are two lessons for class 9a. you are to do lesson A if your name is listed below. if your name is not listed below you are to do lesson B.

The following students are to complete this: lesson A.

Betsalel, Blum, Czitter, Davis, Emir, Freedman, Klein, Levine, Neiman, Silverman, Zahler, Zaltsman

coordinate geometry lesson A
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

there are two attachment below: open the one of the right. the opening exercise page s.11, there is a graph. find the two points that there
are there. the two points are (-2,1) and (3,3). there are three things to notice:

i. notice there is a line connecting the two points.

ii. notice the two black thicker lines
  a) one line goes up and down this is the vertical line, this is the y axis
  b)and the othetr line goes left to right this is the horizontal line, this is the x axis

iii. notice where the two black thicker lines meet, this is called the origins.

you should think of the y-axis, the vertical line and the x-axis, the horizontal line, as number lines starting at the origin where to two axes intercept each other is zero.

how to plot the points on your graph paper.

i. on your graph paper make a x-axis

ii. on your graph paper make a y-axis

note: where to two axes intercept each other is the "starting-point" know as the *origin*.
you are going to plot the two points:(-2,1) and (3,3).
it is important to notice the comma inside the parentheses in between the two numbers.

iii. plot the point (3,3) first by placing your pencil on the origin

a) the number 3 on the left side of the comma is the x value which means move your pencil moving straight along the x-axis three
boxes to the right.
b) the number 3 on the right side of the comma is the y value which means you move your pencil *straight-up* three boxes up.
this is the place where you place a dot on the graph paper. this is the point (3,3).

iv. do the same for the (-2,1)

place your pencil on the origin, the starting point where to two axes intercept.
a) the number -2 on the left side of the comma is the x value which means to move you pencil straight along the x-axis 2 boxes to the left: why to the left? because the number is negative.
b) the number 1 on the right side of the comma is the y value which means you move your pencil *straight-up* 1 box up.
you place a dot at this point. this is where the point (-2,1) is located on the graph.

v. connect the two dots on your graph with a straight line. how do we measure the line?
a) your measurement depends on what units your graph paper is:
if your graph paper is inches then you will measure between 5 6/16 and 5 7/16 inches
if cm, your graph paper is centimeters, cm, you should measure 5.385cm rounding off to 5.4 cm.

graphs with centimeters are easy to measure than measuring distances on graphs with inches, because measurement in inches involves
fractions and it is easier to measure the line in centimeters which uses decimals.

we now need to use the formula for finding the distance between to points

next step:
open the attachment on the left which is a copy of barron's textbook page 99 ***or*** you can use your copy of barron's textbook page 99.
notice the right triangle and please ignore all the "other-stuff" for now, we will get back to this next week. just focus on the right triangle
with the labels run and rise.

i. using this graph paper with the two points we plotted, make a right triangle like the one on page 99 where at the base of the triangle or the bottom of the triangle, it says *"run*" and the other side says *rise*.

ii. count the number of boxes for the *run*, there should be 5 boxes for the run

iii. count the number of boxes for the *rise*, there should be 2 boxes for the rise

iv. before we can use the formula to find the length between the two points (-2,1) and (3,3) we need to do the following calculations:

a) square the run: since the run = 5, then 5 squared is 5 x 5 = 25

b) next, square the rise: since the rise = 2, then 2 squared is 2 x 2 = 4

c) to find the distance between the two points, you need to do one more step:
you have to know how to take the *square-root* of a number. consult your calculator's manual for you calculator. it will tell you how to take the square-root of a number, which is sometime written as *SQRT* meaning square-root.

d) will use the variable D, to represent the distance between the two points. the formula is: D = SQRT(25 + 4) = SQRT(29) where did
we get the 29? by adding up 25 and 4: see steps iv. a) and b) above.

thus, D = SQRT(29) = between 5 6/16 and 5 7/16 *inches* **or** 5..385 *cm* **or** 5.4 *boxes(number of boxes)* depending on what units your graph paper is.
finally compare the actual measurement to the distance between the points: (-2,1) and (3,3). how is the agreement? poor, good or excellent.

the next problem

using the attachment at the bottom click on the right side pdf file. let us look at the example 1. on page s.11 the purple shaded rectangle.

notice there are two points: one on the lower left hand corner, (1,2) and one on the upper right hand corner (15,7).
on a sheet of graph paper plot these points.
i. plot the points (1,2) and (15,7)

a) make an *x-axis*, that is the horizontal line
b) and then make a *y-axis* that is the vertical line.
c) starting at the origin that is where the x-axis and y-axis intercept and plot the points (1,2) and (15,7)

ii. place your pencil on the origin we will plot the first point (1,2)
a) the number 1 on the left side of the comma is the x value which means move your pencil moving along the x-axis 1 box to the right.
b) the number 2 on the right side of the comma is the y value which means you move your pencil *straight-up* 2 boxes up.
this is the place where you place a dot on the graph paper. this is the point (1,2).

iii. do the same for the (15,7)

iv. now connect the two points (1,2) and (15,7) with a straight line:
using this graph paper with the two points, we plotted, make a right triangle like the one on page 99 where at the base of the triangle/the bottom of the triangle, says *"run*" and the other side says *rise*.

we now need to use the formula for finding the distance between to points

step one:
i. open the attachment on the left. we are using barron's textbook page 99.
a) notice the right triangle and please ignore all the "other-stuff" for now, we will get back to this next week. just focus on the right triangle
with the labels run and rise.

ii. on your graph make a right triangle similar to the barron's, and on your graph paper count the number of boxes for the run. how many are
there ? summit this as your answer to be graded when you email the answers.

iii. now, count the number of boxes for the rise. how many boxes are there? summit this as your answer when you email to be graded.

iv. before we can use the formula to find the length between the two points (1,2) and (15,7) we use the variable D for distance, we need to
calculate:
a) square the run, you counted in step ii. above: , the square of a number is the number times itself. summit this answer.
b) square the rise, you counted in step iii. above: , the square of a number is the number times itself. summit this answer.

fill in the blanks and summit your answers: D = SQRT(____ +____) = SQRT(?) = 14.9 inches or 14.9 cm or 14.9 boxes depending on what
units your graph paper is.

now final problem find the distance be the following two points and summit your answer: (2,2) and (11,14)

summit your answers with your class number:
1. problem for s.11 points (1,2) and (15,7) summit your answers for the question marks.
i. run = ? square the run = ?
ii. rise = ? square the rise = ?

2. problem for distance between points (2,2) and (11,14)
i. run = ? square the run = ?
ii. rise = ? square the rise = ?
iii. distance is D = ?

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.2 Attachments