

1/18/17

Designing a City Park
Distance & Mid-point Formulas

NAME: Kely
PERIOD: 2,4,7

You are going to finish designing a city park. With your partner, follow the directions to locate the features listed below on your coordinate plane and answer the accompanying questions. Note that two blocks equal one unit and one unit of your grid represents 1/10 of a mile. Provide answers in both grid units and miles (rounded to the nearest tenth). You must show all calculations in order to receive credit.

- P - picnic area (2, 2)
- O - oak grove (4, 2)
- S - swimming pool (-3, -1)
- ~~T - tennis courts~~ vary
- I - ice Rink (-4, -5)
- ~~F - football field~~ skip
- B - baseball field (2, -2)
- M - merry-go-round (-1/2, -3/2)
- R - rose garden (3, 2)
- G - playground (-1/2, 1/2)
- C - Coffee Shop (5, 2) OR (-1, 2)

- ✓ 1. Locate the following existing park features on the coordinate grid system. P(2,2), O(4,2), B(2,-2) and S(-3, -1).
- ✓ 2. How far is it from the picnic area to the swimming pool?
- ✓ 3. Place the new playground half way between the picnic area and the swimming pool. Give the coordinates of the location of the playground. How far is it from the playground to the picnic area?
- ✓ 4. Show that it is farther from the baseball field to the swimming pool than it is from the baseball field to the oak grove.
- ✓ 5. Place the coffee shop in line with the picnic area and the oak grove and 1/2 mile from the baseball field. There are two possibilities; how far apart are the two locations?
- ✓ 6. Place the merry-go-round halfway between the swimming pool and the baseball field. Give the coordinates of the location of the merry-go-round. How far is the merry-go-round from the playground?
- ✓ 7. Locate the ice skating rink 4/10 mile south and 1/10 mile west of the swimming pool. Give the coordinates of the location of the ice skating rink. How far is it from the ice skating rink to oak grove?
- ✓ 8. The merry-go-round is halfway between the ice skating rink and the rose garden. Locate the rose garden. Give the coordinates of the location of the rose garden. Define the location of the rose garden with respect to the picnic area and the oak grove.
9. The football field is twice as far from the baseball field as it is from the playground. Locate the football field and give its coordinates. skip
10. Decide where to construct the tennis courts and give directions to their location in terms of some of the other features using distance, midpoint and/or compass directions.

answers may vary

-- Designing a City Park -- Using Distance and Midpoint Formulas -- Work Space

2. $\sqrt{(2+3)^2 + (2+1)^2} = \sqrt{25+9} = \sqrt{34}$ $\sqrt{34} = 5.8 \text{ units}$
 $= .6 \text{ miles}$

3. $(\frac{2-3}{2}, \frac{2-1}{2}) = (-\frac{1}{2}, \frac{1}{2})$ $\sqrt{(2+\frac{1}{2})^2 + (2-\frac{1}{2})^2}$
 $\sqrt{\frac{25}{4} + \frac{9}{4}} = \frac{\sqrt{34}}{\sqrt{4}} = \frac{\sqrt{34}}{2} \approx 2.9 \text{ units}$
 $\approx .3 \text{ miles}$

4. $\sqrt{(2+3)^2 + (-2+1)^2} = \sqrt{26} \approx 5.1 \text{ units}$ $\sqrt{(2-4)^2 + (-2-2)^2} = \sqrt{20} \approx 4.5 \text{ units}$
 5.1745

5. $\frac{1}{2} \text{ mile} = 5 \text{ units}$

$5^2 = 4^2 + a^2$ $a = 3$
 $25 = 16 + a^2$
 $-16 -16$
 1 unit apart

6. $(\frac{-3+2}{2}, \frac{-1-2}{2}) = (\frac{-1}{2}, \frac{-3}{2}) : M$

7. $\sqrt{(-4-4)^2 + (-5-2)^2} = \sqrt{64+49} = \sqrt{103} \approx 10.1 \text{ units}$
 1 mile

8.

	I	M	R
x	-4	-1/2	3
y	-5	-3/2	2

9. $-\frac{8}{2} \xrightarrow{+\frac{7}{2}} -\frac{1}{2} \xrightarrow{+\frac{7}{2}} \frac{6}{2} = 3$ $2: (3, 2)$
 $-\frac{5}{2} \xrightarrow{+\frac{7}{2}} -\frac{3}{2} \xrightarrow{+\frac{7}{2}} \frac{4}{2} = 2$
 1 unit to the right of picnic tables, 1 unit to the left of oak grove.

SKIP!

10. answers may vary!

Geometry – Formative Review

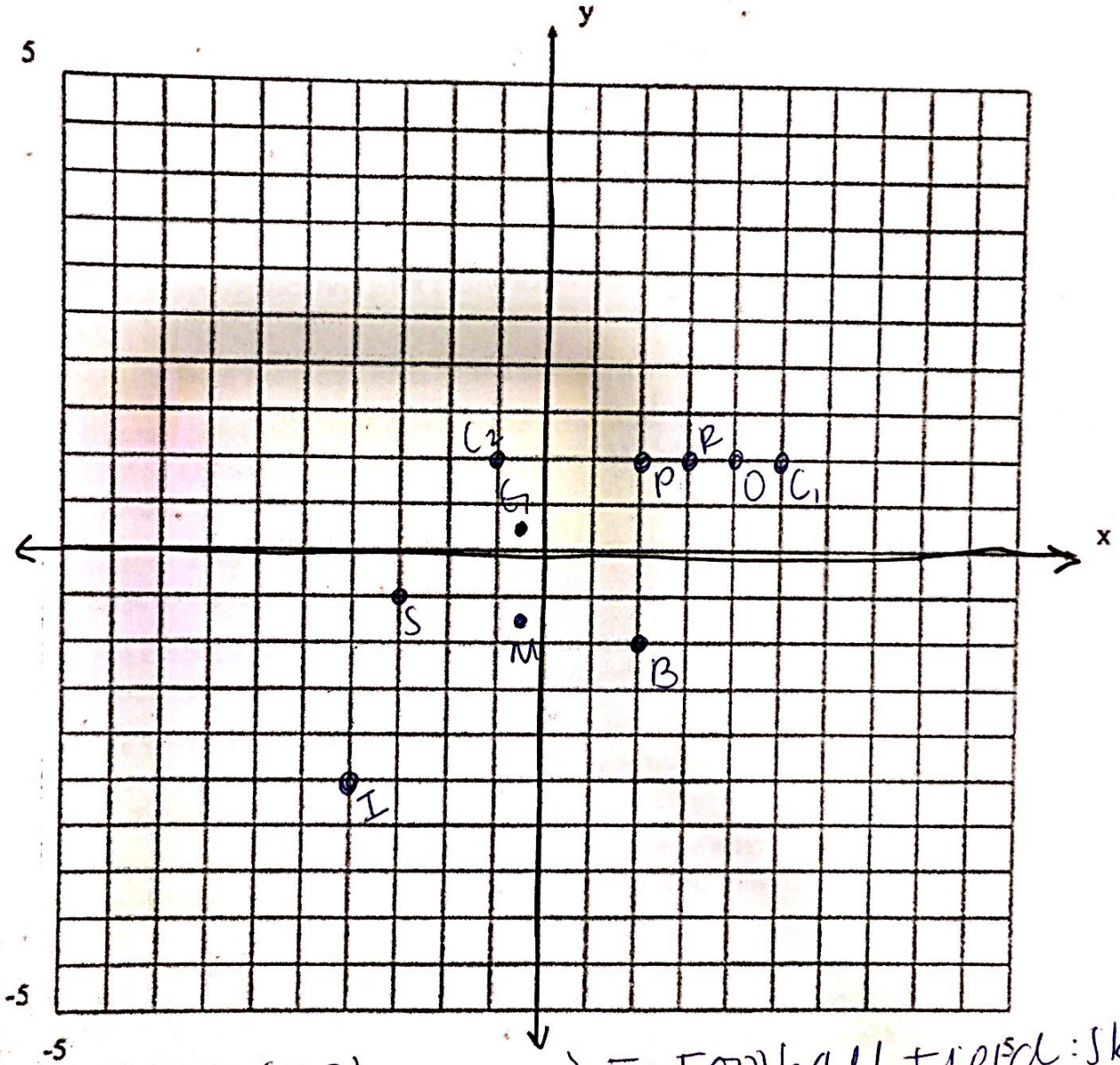
Unit 1- Distance and Midpoint

Name: Kelly

Period: 2 4 7

Date: 9/18/17

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- P- picnic Area: (2, 2)
- O- oak grove: (4, 2)
- S- swimming pool: (-3, -1)
- T- ~~tennis~~ tennis court: answers vary
- I- Ice Rink: (-4, -5)

- F- Football field: skip
- B- Baseball Field: (2, -2)
- M- merry-go-round: $(\frac{1}{2}, \frac{3}{2})$
- R- Rose Garden: (3, 2)
- G- playground: $(-\frac{1}{2}, \frac{1}{2})$
- C- coffee shop: $(\frac{5}{2}, 2)$ or $(-1, 2)$