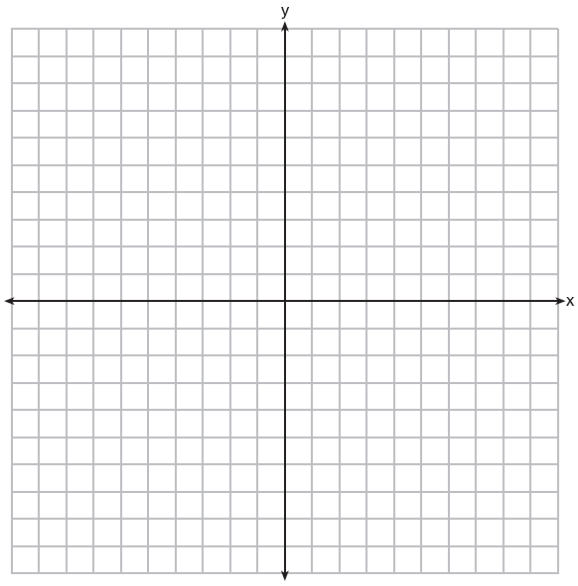
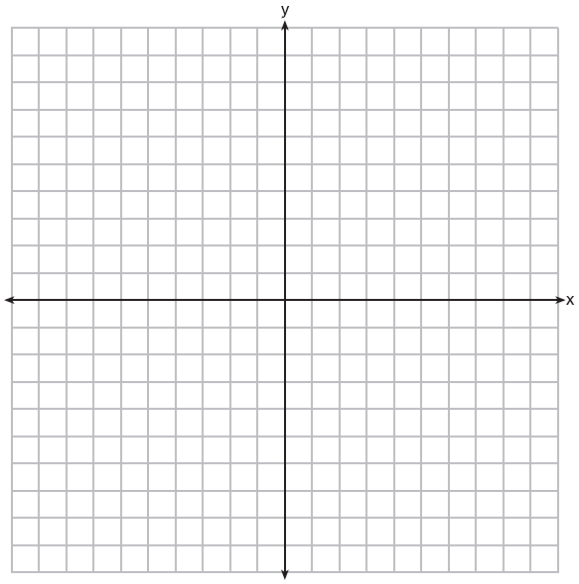
NAME:_____

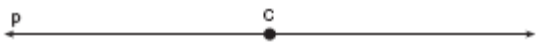
1. 080936ge, P.I. G.G.23
On the set of axes below, sketch the points that are 5 units from the origin and sketch the points that are 2 units from the line $y = 3$.
Label with an **X** all points that satisfy both conditions.



2. fall0837ge, P.I. G.G.23
A city is planning to build a new park. The park must be equidistant from school *A* at (3,3) and school *B* at (3,-5). The park also must be exactly 5 miles from the center of town, which is located at the origin on the coordinate graph. Each unit on the graph represents 1 mile. On the set of axes below, sketch the compound loci and label with an **X** all possible locations for the new park.



3. 080737a, P.I. G.G.22
In the diagram below, town *C* lies on straight road *p*. Sketch the points that are 6 miles from town *C*. Then sketch the points that are 3 miles from road *p*. How many points satisfy both conditions?



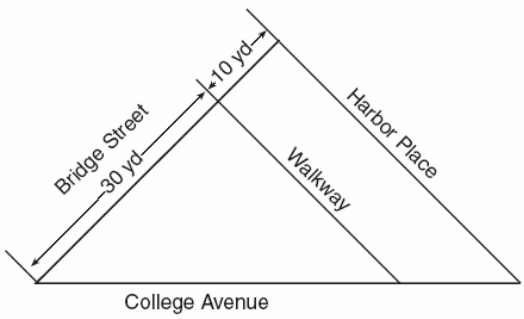
NAME:_____

4. 060932ge, P.I. G.G.22

The length of $\overline{AB}$ is 3 inches. On the diagram below, sketch the points that are equidistant from *A* and *B* and sketch the points that are 2 inches from *A*. Label with an **X** all points that satisfy both conditions.

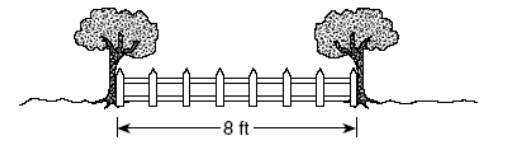
5. 060332a, P.I. G.G.22

A triangular park is formed by the intersection of three streets, Bridge Street, Harbor Place, and College Avenue, as shown in the accompanying diagram. A walkway parallel to Harbor Place goes through the park. A time capsule has been buried in the park in a location that is equidistant from Bridge Street and College Avenue and 5 yards from the walkway. Indicate on the diagram with an **X** *each* possible location where the time capsule could be buried.



6. 010127a, P.I. G.G.22

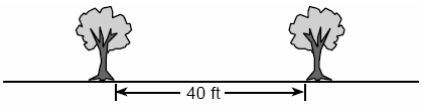
Steve has a treasure map, represented in the accompanying diagram, that shows two trees 8 feet apart and a straight fence connecting them. The map states that treasure is buried 3 feet from the fence and equidistant from the two trees.



a Sketch a diagram to show all the places where the treasure could be buried. Clearly indicate in your diagram where the treasure could be buried.
b What is the distance between the treasure and one of the trees?

7. 089925a, P.I. G.G.22

Maria's backyard has two trees that are 40 feet apart, as shown in the accompanying diagram. She wants to place lampposts so that the posts are 30 feet from both of the trees. Draw a sketch to show where the lampposts could be placed in relation to the trees. How many locations for the lampposts are possible?

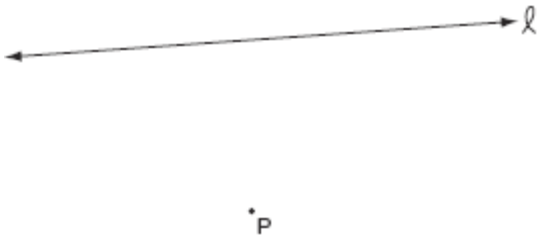


8. 060032a, P.I. G.G.22

A treasure map shows a treasure hidden in a park near a tree and a statue. The map indicates that the tree and the statue are 10 feet apart. The treasure is buried 7 feet from the base of the tree and also 5 feet from the base of the statue. How many places are possible locations for the treasure to be buried? Draw a diagram of the treasure map, and indicate with an **X** *each* possible location of the treasure.

NAME:_____

9. 010623a, P.I. G.G.22
In the accompanying diagram, point P lies 3 centimeters from line ℓ.



How many points are both 2 centimeters from line ℓ and 1 centimeter from point P?

[A] 2 [B] 4 [C] 1 [D] 0

10. 060912ge, P.I. G.G.22
In a coordinate plane, how many points are both 5 units from the origin and 2 units from the x-axis?

[A] 2 [B] 3 [C] 1 [D] 4

11. 010527a, P.I. G.G.22
How many points are equidistant from two parallel lines and also equidistant from two points on one of the lines?

[A] 2 [B] 4 [C] 1 [D] 3

12. 080203a, P.I. G.G.22
What is the total number of points equidistant from two intersecting straight roads and also 300 feet from the traffic light at the center of the intersection?

[A] 1 [B] 0 [C] 4 [D] 2

13. 080131a, P.I. G.G.22
Point P is located on $\overleftrightarrow{AB}$.
a Describe the locus of points that are
(1) 3 units from $\overleftrightarrow{AB}$
(2) 5 units from point P
b How many points satisfy both conditions in part *a*?

14. 080003a, P.I. G.G.22
In the coordinate plane, what is the total number of points 5 units from the origin and equidistant from both the x- and y-axes?

[A] 2 [B] 1 [C] 4 [D] 0

15. 010020a, P.I. G.G.22
The distance between parallel lines ℓ and m is 12 units. Point A is on line ℓ. How many points are equidistant from lines ℓ and m and 8 units from point A.

[A] 3 [B] 4 [C] 1 [D] 2

[4] Both loci are drawn correctly, and the three points of intersection are labeled with an **X**.
[3] Both loci are drawn correctly, but only two points of intersection are labeled.
or [3] Both loci are drawn, but one graphing error is made, but appropriate points of intersection are labeled.
[2] Both loci are drawn correctly, but the points of intersection are not labeled or are labeled incorrectly.
or [2] Both loci are drawn, but two or more graphing errors are made, but appropriate points of intersection are labeled.
or [2] Both loci are drawn, but one conceptual error is made, but appropriate points of intersection are labeled.
[1] One locus is drawn correctly, but no further correct work is shown.
or [1] **X**s are placed appropriately, but no loci are drawn.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[1]

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[4] Both loci are drawn correctly and the two points of intersection are labeled with an **X**.
[3] Both loci are drawn correctly, but only one correct point of intersection is labeled.
or [3] Both loci are drawn, but one graphing error is made, but appropriate points of intersection are labeled.
[2] Both loci are drawn correctly, but the points of intersection are not labeled or are labeled incorrectly.
or [2] Both loci are drawn, but two or more graphing errors are made, but appropriate points of intersection are labeled.
or [2] One conceptual error is made, such as drawing two parallel lines instead of a circle, but appropriate points of intersection are labeled.
[1] One locus is drawn correctly, but no further correct work is shown.
or [1] **X**s are placed appropriately, but no loci are drawn.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[2]

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[3] 4, and an appropriate sketch is drawn that shows a circle with C as its center and a radius of 6 and two parallel lines, one 3 units above and one 3 units below line p.
[2] An appropriate sketch is drawn, but the answer 4 is not found.
or [2] Only one locus is drawn correctly, but the appropriate number of points of intersection is found.
[1] Only one locus is drawn correctly, and no further correct work is shown.
or [1] Both loci are drawn incorrectly, but the appropriate number of points of intersection is found.
or [1] 4, but no work or sketch is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[3]

[2] Both loci are sketched correctly, and the two points of intersection are labeled with an **X**.
[1] Both loci are sketched correctly, but the points of intersection are not labeled or are labeled incorrectly.
or [1] Appropriate work is shown, but one conceptual error is made, but appropriate points of intersection are labeled.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
[4]

[4] Two **X**s are indicated at the intersections of the angle bisector and the parallel lines in the correct sketch of the loci.
[3] All loci are drawn correctly, but no **X**s are drawn to indicate the locations, or only one **X** is drawn.
or [3] The angle bisector is drawn correctly, but only one line is drawn parallel to the walkway, but an **X** is indicated appropriately.
[2] Only one correct locus is drawn, but **X**s indicate the two appropriate locations of the intersection of the loci.
[1] **X**s are drawn in the correct locations, but no loci are shown.
or [1] Only one correct locus is drawn, and no **X**s are indicated.
or [1] Both loci are drawn incorrectly, but **X**s are drawn on the appropriate points of intersection.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
[5]

a [2] A correct sketch is drawn that shows two possible locations, such as parallel lines and a perpendicular bisector. Students can draw their own sketch or use the diagram given.
[1] A correct sketch is drawn, but with no indication of where the treasure is buried.
or [1] A partial sketch is drawn, showing either the distances from the fence or the distance from the trees.
b [1] 5 feet
or [1] An appropriate answer is found for an incorrect part a.
a and b [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
[6]

[2] 2 and an appropriate sketch of two circles intersecting in two points is shown.
[1] 2 and no sketch is shown.
or [1] An appropriate sketch is shown, without indicating 2 as the possibilities.
or [1] An appropriate number is found, based on an inappropriate sketch.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
[7]

[4] A correct diagram is drawn, two **X** points are marked, a numerical 2 is given for the places to dig, and appropriate work is shown.
[3] The diagram is correct including two **X** points, but an incorrect answer or no answer is found.
[2] One correct locus situation and one incorrect locus situation are drawn, but the answer is appropriate according to the diagram.
or [2] Each locus situation is correctly drawn, but no **X** points are marked, and no numerical answer is found.
[1] Only one locus situation is correctly drawn and an incorrect conclusion or no conclusion is shown.
or [1] 2 but no work is shown.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[8]

[9] C

[10] D

[11] C

[12] C

a [3] Two parallel lines, one 3 units above and one 3 units below $\overleftrightarrow{AB}$, and a circle with its center at P with a radius of 5 units are described correctly in words or drawn.
[2] Only one parallel line 3 units above or 3 units below $\overleftrightarrow{AB}$ and a correct circle are described in words or drawn.
or [2] Appropriate parallel lines are shown, but the circle is incomplete.
[1] Both parallel lines and the circle have incomplete descriptions or drawings.
[0] Only one incomplete locus is described or drawn.
b [1] 4, and appropriate work is shown.
or [1] An appropriate answer for an incorrect part a is found.
a and b [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.

[13]

[14] C

[15] D