

MYSTERY PICTURE



CENTRAL ANGLES AND ARC MEASURE

Naming Arcs: Is the Name Right?

25 circles · minor arcs, major arcs and semicircles · no numbers · a picture appears

FREE

1 arc AB	2 arc AC	3 arc BLF	4 arc DH	5 arc MT
6 arc EGF	7 arc QWS	8 arc JG	9 arc AHE	10 arc FC
11 arc JLK	12 arc BU	13 arc JVD	14 arc EK	15 arc FL
16 arc QP	17 arc UVT	18 arc HWM	19 arc RA	20 arc BE
21 arc DFB	22 arc CE	23 arc KPM	24 arc LQN	25 arc DPG

1. **Give each student page 3** and a pencil. Nothing else is needed.
2. **Say this once:** *“Look at the heavy arc. Two letters name a minor arc. Three letters, with a point of the arc in the middle, name a major arc or a semicircle. If the name under the circle is right for the heavy arc, fill the square with slanted lines. If not, leave it white.”*
3. **Let them work.** The picture shows when they are right. Nothing else is needed.

Student sheet	page 3, one per student. A box at the top shows a minor arc, a major arc and a semicircle with their names.
Answers	pages 4–5, for you.

Each square shows a circle with four lettered points and one arc drawn heavy. Under it is a name, such as arc *EGF*. There are no numbers on the sheet. This sheet names arcs this way: two letters name the minor arc, and three letters, with a point of the arc in the middle, name a major arc or a semicircle. Some textbooks use other definitions, so tell the class which ones this sheet uses. Nine squares are filled.

The white squares hold the naming mistakes students make. In four a major arc has a two-letter name, which names the minor arc. In five a major arc has three letters, but the middle letter is on the other arc. In three a semicircle has two letters, which fit both halves. In one a minor arc has three letters, and in three the name ends at the wrong point.

If part of a student’s picture looks wrong, the mistake is in that square. Ask: *“Put a finger on the first letter. Trace the heavy arc. Do you pass the middle letter? Do you stop at the last letter?”* Guessing does not work. Every simple guessing rule, such as filling every square with a three-letter name, gets at least eight squares wrong.



This is the free lesson this activity came from. The worksheet, the full answers and the lesson plan are on it, at three levels of difficulty.
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Mystery Picture — is the name right?

Central angles and arc measure

Name _____

Period _____

Date _____

Each circle has one heavy arc and a name under it. **Is the name right for the heavy arc? If yes, fill the square with slanted lines. If no, leave it white.** A picture appears. If part of it is missing, check that square again.

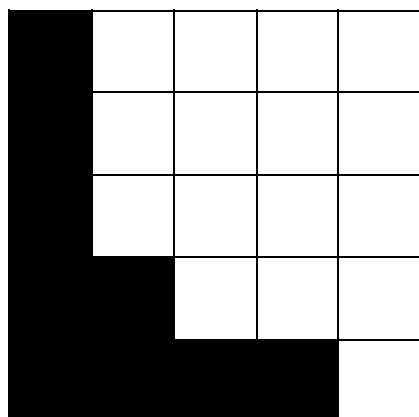
Two letters name the minor arc, like arc AB. Three letters, with a point of the arc in the middle, name a major arc or a semicircle, like arc AXB. A semicircle needs three letters: its two ends fit both halves. minor arc AB major arc AXB semicircle AXB				
1	2	3	4	5
arc AB	arc AC	arc BLF	arc DH	arc MT
6	7	8	9	10
arc EGF	arc QWS	arc JG	arc AHE	arc FC
11	12	13	14	15
arc JLK	arc BU	arc JVD	arc EK	arc FL
16	17	18	19	20
arc QP	arc UVT	arc HWM	arc RA	arc BE
21	22	23	24	25
arc DFB	arc CE	arc KPM	arc LQN	arc DPG



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Mystery Picture — answers

For the teacher



The finished picture is **the letter L**. Nine squares are filled.

To check a square, trace the heavy arc from one end to the other. Two letters name the minor arc. Three letters, with a point of the arc in the middle, name a major arc or a semicircle. The table gives the reason for every square. It goes on over the page.

	The name	Answer	Why
1	arc <i>AB</i>	fill	The heavy arc is the minor arc from A to B. Two letters name the minor arc, so arc AB is right.
2	arc <i>AC</i>	white	The heavy arc is the major arc. Two letters name the minor arc, the other arc from A to C. The heavy arc is arc AEC.
3	arc <i>BLF</i>	white	The heavy arc is the major arc, but L is on the other arc, the minor one. The heavy arc is arc BJF.
4	arc <i>DH</i>	white	DH is a diameter, so two letters fit both halves and name neither. A semicircle needs three letters. The heavy arc is arc DKH.
5	arc <i>MT</i>	white	The heavy arc ends at M and P, but arc MT ends at T. The heavy arc is arc MP.
6	arc <i>EGF</i>	fill	The heavy arc is the major arc from E to F, and G is on it. Three letters with G in the middle name it, so arc EGF is right.
7	arc <i>QWS</i>	white	The heavy arc is the major arc, but W is on the other arc, the minor one. The heavy arc is arc QUS.
8	arc <i>JG</i>	white	The heavy arc is the major arc. Two letters name the minor arc, the other arc from G to J. The heavy arc is arc GLJ.
9	arc <i>AHE</i>	white	The heavy arc is the minor arc. Three letters are kept for a major arc or a semicircle. The heavy arc is arc AE.
10	arc <i>FC</i>	white	CF is a diameter, so two letters fit both halves and name neither. A semicircle needs three letters. The heavy arc is arc CMF.
11	arc <i>JLK</i>	fill	JK is a diameter, so the heavy arc is a semicircle, and L is on it. Three letters with L in the middle name it, so arc JLK is right.
12	arc <i>BU</i>	white	The heavy arc ends at B and G, but arc BU ends at U. The heavy arc is arc BG.

Mystery Picture — answers, squares 13 to 25

For the teacher

	The name	Answer	Why
13	arc <i>JVD</i>	white	The heavy arc is the major arc, but V is on the other arc, the minor one. The heavy arc is arc DRJ.
14	arc <i>EK</i>	white	The heavy arc is the major arc. Two letters name the minor arc, the other arc from E to K. The heavy arc is arc ENK.
15	arc <i>FL</i>	white	FL is a diameter, so two letters fit both halves and name neither. A semicircle needs three letters. The heavy arc is arc FPL.
16	arc <i>QP</i>	fill	The heavy arc is the minor arc from P to Q. Two letters name the minor arc, so arc QP is right.
17	arc <i>UVT</i>	fill	The heavy arc is the major arc from T to U, and V is on it. Three letters with V in the middle name it, so arc UVT is right.
18	arc <i>HWM</i>	white	The heavy arc is the major arc, but W is on the other arc, the minor one. The heavy arc is arc HQM.
19	arc <i>RA</i>	white	The heavy arc ends at A and C, but arc RA ends at R. The heavy arc is arc AC.
20	arc <i>BE</i>	white	The heavy arc is the major arc. Two letters name the minor arc, the other arc from B to E. The heavy arc is arc BME.
21	arc <i>DFB</i>	fill	BD is a diameter, so the heavy arc is a semicircle, and F is on it. Three letters with F in the middle name it, so arc DFB is right.
22	arc <i>CE</i>	fill	The heavy arc is the minor arc from C to E. Two letters name the minor arc, so arc CE is right.
23	arc <i>KPM</i>	fill	The heavy arc is the major arc from K to M, and P is on it. Three letters with P in the middle name it, so arc KPM is right.
24	arc <i>LQN</i>	fill	LN is a diameter, so the heavy arc is a semicircle, and Q is on it. Three letters with Q in the middle name it, so arc LQN is right.
25	arc <i>DPG</i>	white	The heavy arc is the major arc, but P is on the other arc, the minor one. The heavy arc is arc DKG.