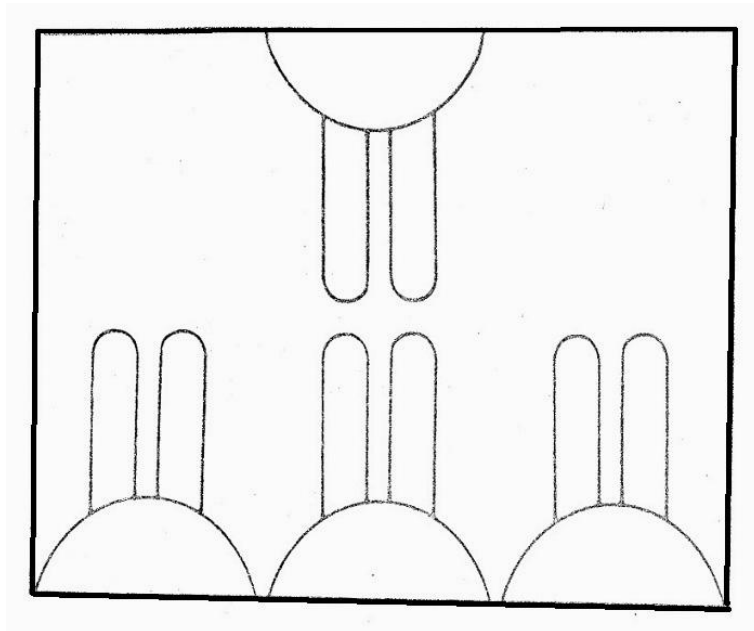


Droodle for Angles in a Circle – View from the Top
A Puzzle by David Pleacher

Grade Level: Geometry

Objective: The student will be able to determine the measures of angles in a circle.

Can you name this droodle?



Back in 1953, Roger Price invented a minor art form called the Droodle, which he described as "a borkley-looking sort of drawing that doesn't make any sense until you know the correct title." This Droodle was drawn by Lori Philipson and published in *GAMES* magazine in December 1983. To determine the titles to this droodle, you must first solve the 34 problems in the puzzle and find the corresponding answers. Then replace each numbered blank in the puzzle with the letter corresponding to the answer for that problem and that will give you the titles.

Here are four titles for this droodle:

Title 1:

$\overline{27}$ $\overline{1}$ $\overline{33}$
 $\overline{27}$ $\overline{31}$ $\overline{14}$ $\overline{15}$ $\overline{12}$ $\overline{29}$
 $\overline{11}$ $\overline{15}$ $\overline{3}$
 $\overline{27}$ $\overline{34}$ $\overline{12}$ $\overline{16}$ $\overline{8}$ $\overline{13}$ $\overline{34}$

Title 2:

$$\frac{3}{17} \frac{2}{26} \frac{19}{27} \frac{31}{3} \frac{33}{8} \frac{8}{20} \frac{24}{13}$$

Title 3:

$$\frac{14}{17} \frac{8}{2} \frac{9}{3} \frac{18}{13} \frac{3}{7} \frac{15}{7} \frac{27}{26} \frac{31}{29} \frac{13}{27}$$

Title 4:

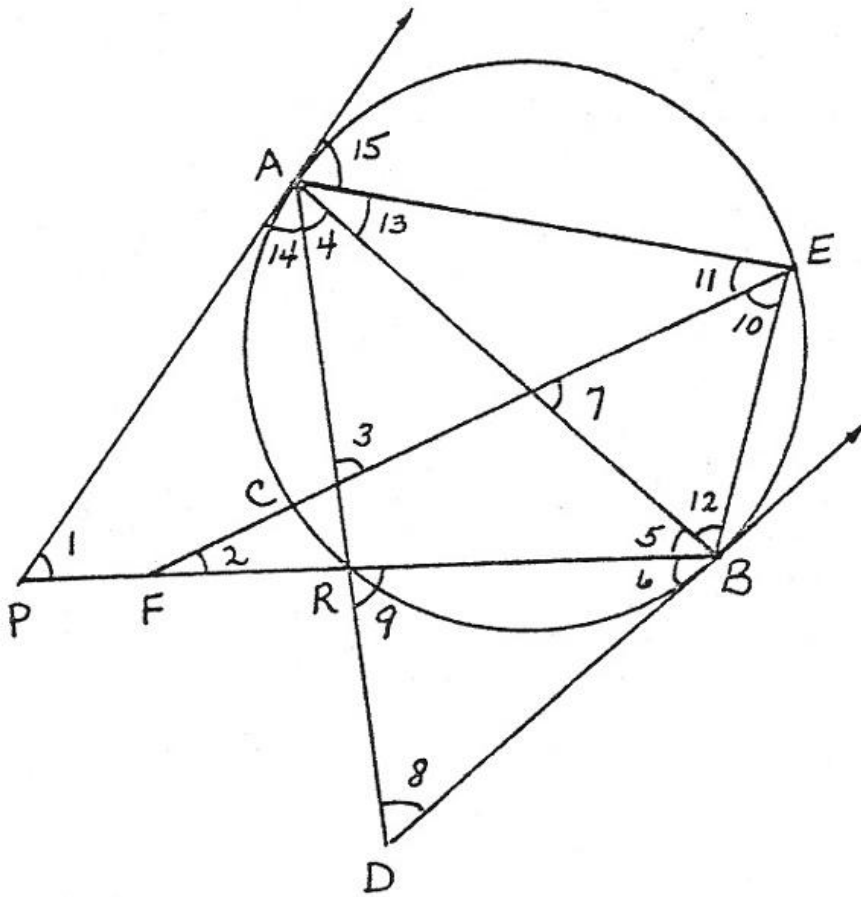
$$\frac{7}{3} \frac{13}{4} \frac{34}{20} \frac{34}{19} \frac{16}{12} \frac{8}{13} \frac{34}{32} \frac{17}{34} \frac{6}{29} \frac{33}{34} \frac{23}{20}$$

$$\frac{19}{5} \frac{13}{33} \frac{3}{11} \frac{13}{13} \frac{19}{26} \frac{34}{20} \frac{7}{15} \frac{12}{29}$$

Here are the choices for your answers:

- | | | |
|------------------|----------------|-----------------|
| A. 10° | B. 22° | C. 22.5° |
| D. 30° | E. 31° | F. 35° |
| G. 40° | H. 44° | I. 45° |
| J. 49° | K. 52° | L. 52.5° |
| M. 56° | N. 60° | O. 65° |
| P. 66° | Q. 70° | R. 74° |
| S. 75° | T. 80° | U. 84° |
| V. 90° | W. 100° | X. 110° |
| Y. 127.5° | Z. 140° | |

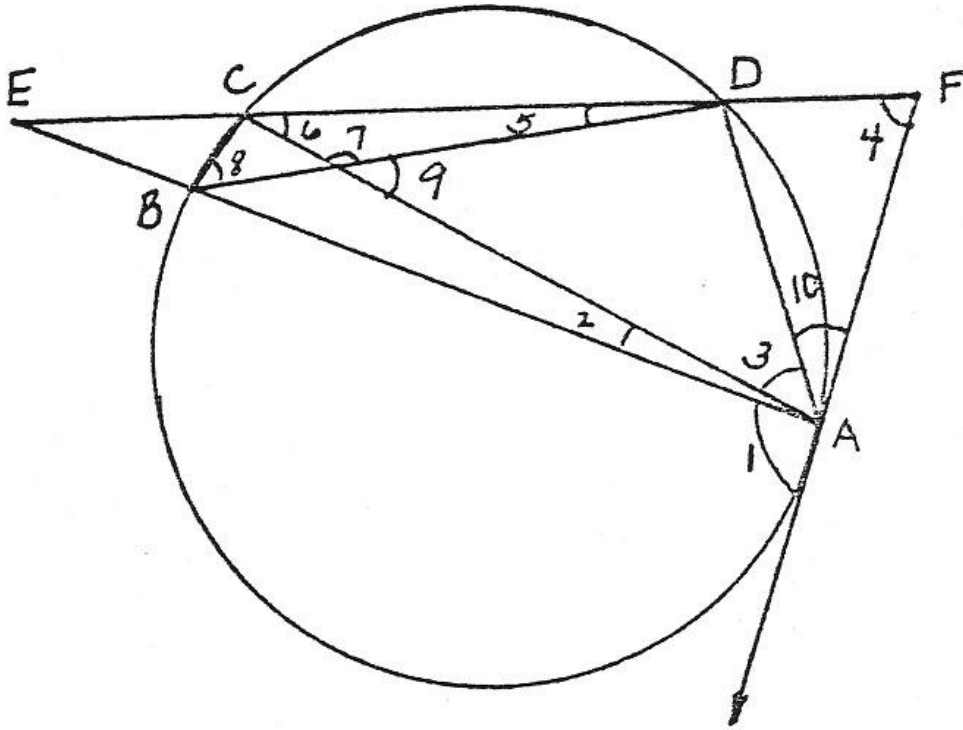
I. Given: $m(\text{arc } AE) = 130^\circ$, $m(\text{arc } CR) = 18^\circ$, $m(\text{arc } AC) = 70^\circ$, $m(\text{arc } BR) = 80^\circ$,
 \overline{PA} and \overline{BD} are tangents.



Determine the measures of the following angles:

- | | |
|----------------------------|----------------------------|
| ___ 1. $m\angle 1 =$ ___ | ___ 11. $m\angle 11 =$ ___ |
| ___ 2. $m\angle 2 =$ ___ | ___ 12. $m\angle 12 =$ ___ |
| ___ 3. $m\angle 3 =$ ___ | ___ 13. $m\angle 13 =$ ___ |
| ___ 4. $m\angle 4 =$ ___ | ___ 14. $m\angle 14 =$ ___ |
| ___ 5. $m\angle 5 =$ ___ | ___ 15. $m\angle 15 =$ ___ |
| ___ 6. $m\angle 6 =$ ___ | |
| ___ 7. $m\angle 7 =$ ___ | |
| ___ 8. $m\angle 8 =$ ___ | |
| ___ 9. $m\angle 9 =$ ___ | |
| ___ 10. $m\angle 10 =$ ___ | |

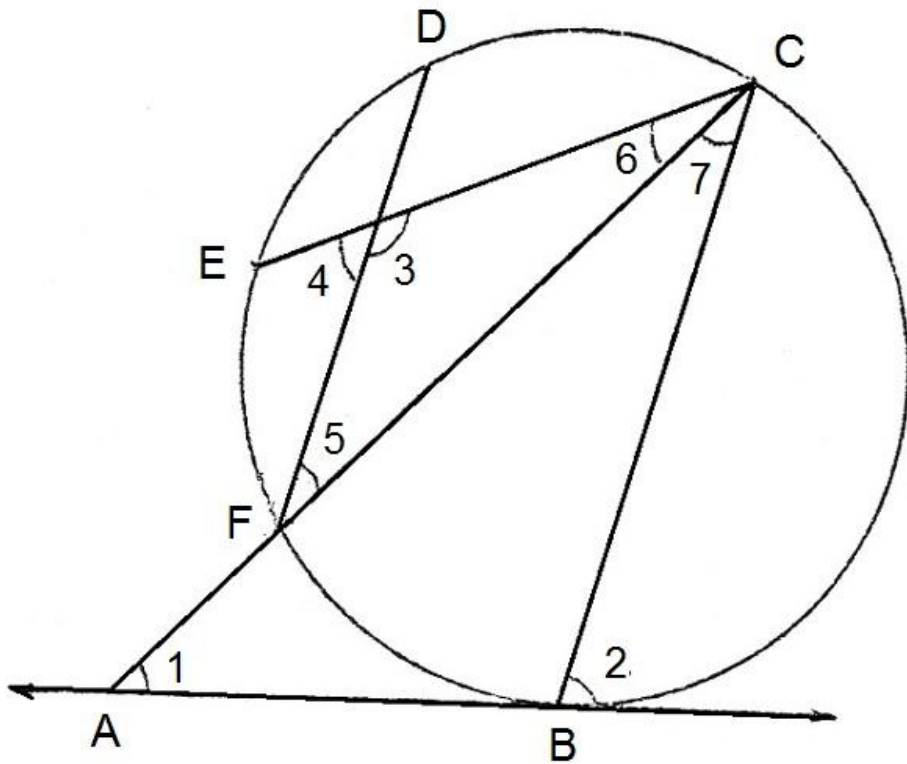
II. Given: $m\angle CEB = 20^\circ$, $m\angle DBA = 30^\circ$, $m\angle BDA = 100^\circ$, \overline{FA} is a tangent.



Determine the measures of the following angles:

- ___ 16. $m\angle 1 =$ ___
- ___ 17. $m\angle 2 =$ ___
- ___ 18. $m\angle 3 =$ ___
- ___ 19. $m\angle 4 =$ ___
- ___ 20. $m\angle 5 =$ ___
- ___ 21. $m\angle 6 =$ ___
- ___ 22. $m\angle 7 =$ ___
- ___ 23. $m\angle 8 =$ ___
- ___ 24. $m\angle 9 =$ ___
- ___ 25. $m\angle 10 =$ ___

III. Given: \overline{AB} is a tangent, $\overline{FD} \parallel \overline{BC}$, $m(\text{arc } ED) = 45^\circ$, $m(\text{arc } FB) = 60^\circ$, $m(\text{arc } BC) = 150^\circ$.



Determine the measures of the following:

- ___ 26. $m\angle 1 =$ ___
- ___ 27. $m\angle 2 =$ ___
- ___ 28. $m\angle 3 =$ ___
- ___ 29. $m\angle 4 =$ ___
- ___ 30. $m\angle 5 =$ ___
- ___ 31. $m\angle 6 =$ ___
- ___ 32. $m\angle 7 =$ ___
- ___ 33. $m(\text{arc } EF) =$ ___
- ___ 34. $m(\text{arc } DC) =$ ___