

Basic angle rules — Solutions

Apply angle rules to find missing angles in diagrams.



Name _____

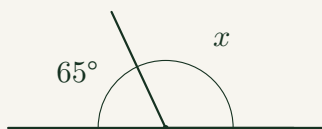
Date _____

Using angle rules

Use angles on a line (180°), angles around a point (360°), vertically opposite angles (equal), and angles in a triangle (180°) to find all missing angles. Show your working.

Worked example

Worked example: Find angle x

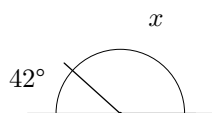


Angles on a straight line sum to 180° .

$$65^\circ + x = 180^\circ$$

$$x = 180^\circ - 65^\circ = 115^\circ$$

1. Find angle x



Solution

$$x = 180^\circ - 42^\circ$$

$$x = 138^\circ$$

2. Find angle x

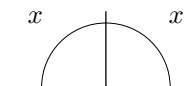


Solution

$$x = 180^\circ - 128^\circ$$

$$x = 52^\circ$$

3. Find angle x

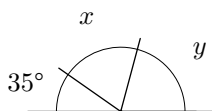


Solution

$$x + x = 180^\circ$$

$$x = 90^\circ$$

4. Find angles x and y

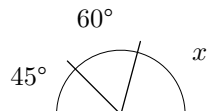


Solution

$$35^\circ + x + y = 180^\circ$$

$$x = 70^\circ, y = 75^\circ$$

5. Find angle x

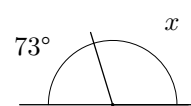


Solution

$$x = 180^\circ - 45^\circ - 60^\circ$$

$$x = 75^\circ$$

6. Find angle x

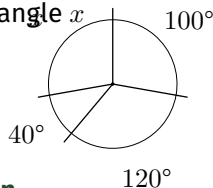


Solution

$$x = 180^\circ - 73^\circ$$

$$x = 107^\circ$$

7. Find angle x

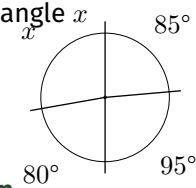


Solution

$$x = 360^\circ - 260^\circ$$

$$x = 100^\circ$$

8. Find angle x

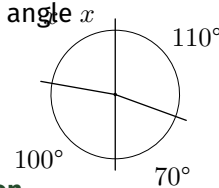


Solution

$$x = 360^\circ - 260^\circ$$

$$x = 100^\circ$$

9. Find angle x



Solution

$$x = 360^\circ - 280^\circ$$

$$x = 80^\circ$$

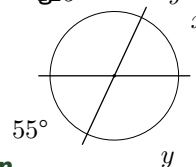
10. Four equal angles around a point. Find each angle.

Solution

$$\text{Each} = 360^\circ \div 4$$

$$= 90^\circ$$

11. Find angles x and y .



Solution

$$x = 125^\circ \text{ (vert. opp.)}$$

$$y = 55^\circ \text{ (vert. opp.)}$$

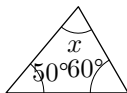
12. Two lines cross. One angle is 142° . Find the angle opposite to it.

Solution

Vertically opposite angles are equal.

$$\text{Opposite angle} = 142^\circ$$

13. Find angle x in the triangle.



Solution

$$x = 180^\circ - 50^\circ - 60^\circ$$

$$x = 70^\circ$$

14. Find angle x in the triangle.

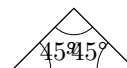


Solution

$$x = 180^\circ - 70^\circ - 55^\circ$$

$$x = 55^\circ$$

15. Find angle x in the triangle.



Solution

$$x = 180^\circ - 45^\circ - 45^\circ$$

$$x = 90^\circ$$

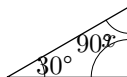
16. An equilateral triangle has all angles equal. Find each angle.

Solution

$$\text{Each} = 180^\circ \div 3$$

$$= 60^\circ$$

17. Find angle x in the triangle.

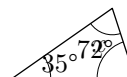


Solution

$$x = 180^\circ - 30^\circ - 90^\circ$$

$$x = 60^\circ$$

18. Find angle x in the triangle.

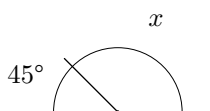


Solution

$$x = 180^\circ - 35^\circ - 72^\circ$$

$$x = 73^\circ$$

19. Find angle x using angles on a line.



Solution

$$x = 180^\circ - 45^\circ$$

$$x = 135^\circ$$

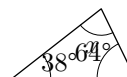
20. Two intersecting lines create four angles. One angle is 68° . Find the other three angles.

Solution

$$\text{Opposite} = 68^\circ$$

$$\text{Other two} = 180^\circ - 68^\circ = 112^\circ$$

21. Find angle x in the triangle.

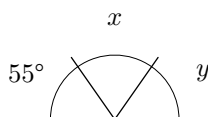


Solution

$$x = 180^\circ - 38^\circ - 64^\circ$$

$$x = 78^\circ$$

22. Find angles x and y on the line.

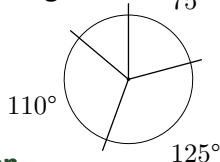


Solution

$$55^\circ + x + y = 180^\circ$$

$$x = 70^\circ, y = 55^\circ$$

23. Find angle x around the point.



Solution

$$x = 360^\circ - 310^\circ$$

$$x = 50^\circ$$

24. Explain why a triangle cannot have two 100° angles.

Solution

Two 100° angles = 200° .
This exceeds 180° , so it is impossible.

25. A triangle has angles in the ratio $1 : 2 : 3$. Find each angle.

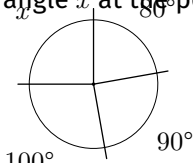
Solution

$$1 + 2 + 3 = 6 \text{ parts;}$$

$$180^\circ \div 6 = 30^\circ.$$

$$\text{Angles: } 30^\circ, 60^\circ, 90^\circ$$

26. Find angle x at the point.

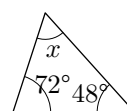


Solution

$$x = 360^\circ - 270^\circ$$

$$x = 90^\circ$$

27. Use the triangle angle sum rule to find x .



Solution

$$x = 180^\circ - 72^\circ - 48^\circ$$

$$x = 60^\circ$$