

Chapter 1- Lesson 3

Angles and their Measures

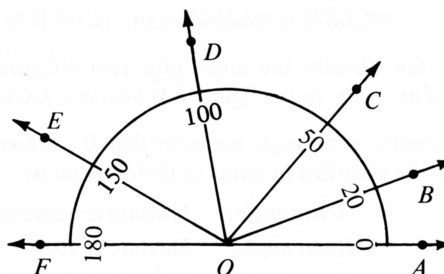
Goals

- Measure angles with a protractor
- Identify and name angles using one and three letter notation
- Classify angles as acute, right, obtuse, or straight
- Use algebra to find the measure of angles
- Use the concept of bisect
- Use the midpoint formula

WRITTEN EXERCISES

State the measure of each angle.

- A
- | | |
|------------------|------------------|
| 1. $\angle AOB$ | 2. $\angle EOF$ |
| 3. $\angle BOD$ | 4. $\angle COE$ |
| 5. $\angle EOB$ | 6. $\angle BOF$ |
| 7. $\angle EOA$ | 8. $\angle DOE$ |
| 9. $\angle AOD$ | 10. $\angle DOF$ |
| 11. $\angle BOC$ | 12. $\angle AOC$ |



Exs. 1-22

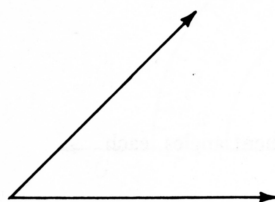
13. How many right angles are shown?
 14. How many straight angles are shown?
 15. Name an angle whose bisector is shown.
 Then name the bisector.

Name the angles that have the given measure.

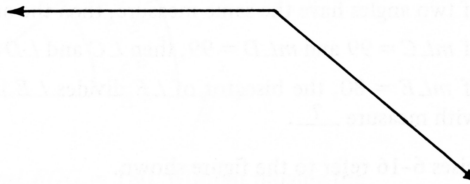
- | | | |
|---------|-----------------------|---------|
| 16. 30 | 17. 80 | 18. 100 |
| 19. 130 | 20. 50 (three angles) | |
21. Name the acute angles shown. 22. Name the obtuse angles shown.

Use a protractor to measure each angle.

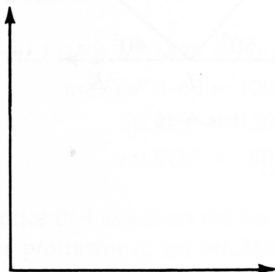
23.



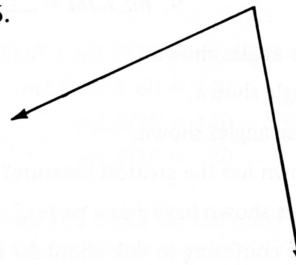
24.



25.



26.



Use a protractor to draw $\angle ABC$ to fit the description.

27. $m\angle ABC = 35$

28. $m\angle ABC = 82$

29. $m\angle ABC = 120$

30. $m\angle ABC = 90$

31. $m\angle ABC = 59$

32. $m\angle ABC = 155$

33. $\angle ABC$ is acute.34. $\angle ABC$ is obtuse.35. $\angle ABC$ is a right angle.36. $\angle ABC$ is a straight angle.

Complete.

B 37. $m\angle AEB + m\angle BEC = m\angle \underline{\quad ? \quad}$

38. $m\angle AED = m\angle AEB + m\angle \underline{\quad ? \quad} + m\angle CED$

39. If $m\angle AEB = m\angle DEC$, then $m\angle AEC = m\angle \underline{\quad ? \quad}$.

40. If $\angle AEB \cong \angle DEC$, then $\angle AEC \cong \angle \underline{\quad ? \quad}$.

41. If $m\angle AEC = m\angle DEB$, then $m\angle AEB = m\angle \underline{\quad ? \quad}$.

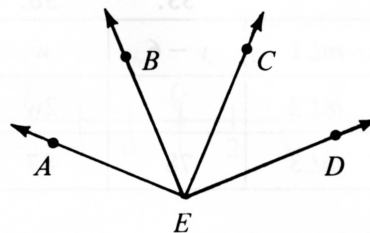
42. If $\angle AEC \cong \angle DEB$, then $\angle \underline{\quad ? \quad} \cong \angle DEC$.

43. If $\angle BEC \cong \angle CED$, then $\underline{\quad ? \quad}$ bisects $\angle \underline{\quad ? \quad}$.

44. If $\angle AEB \cong \angle BEC$ and $m\angle BEC = 55$, then $m\angle AEC = \underline{\quad ? \quad}$.

45. If $\angle AEB \cong \angle BEC$, then $m\angle AEB = \frac{1}{2} m\angle \underline{\quad ? \quad}$.

46. If $\angle AEB \cong \angle BEC \cong \angle CED$, then $m\angle AED = \underline{\quad ? \quad} m\angle AEB$.



Exs. 37-46

\overrightarrow{OY} bisects $\angle XOZ$. Use the given information to find $m\angle 1$.

47. $m\angle XOZ = 50$

48. $m\angle XOZ = 68$

If $\angle 1 \cong \angle 2$, find the measure of $\angle 1$.

EXAMPLE $m\angle 1 = 4x$; $m\angle 2 = x + 27$

SOLUTION $m\angle 1 = m\angle 2$

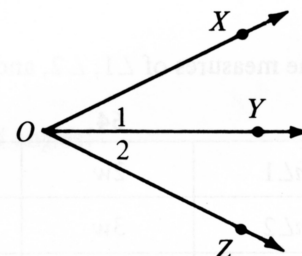
$4x = x + 27$

$3x = 27$

$x = 9$

$m\angle 1 = 4(9)$

$m\angle 1 = 36$



Exs. 47-54

49. $m\angle 1 = 2z$; $m\angle 2 = 3z - 16$

50. $m\angle 1 = 9y$; $m\angle 2 = 7y + 18$

51. $m\angle 1 = 2x + 7$; $m\angle 2 = 5x - 8$

52. $m\angle 1 = -3k + 60$; $m\angle 2 = 5k - 4$

53. $m\angle 1 = 1.2y - 9$; $m\angle 2 = 2.6y - 72$

54. $m\angle 1 = \frac{1}{2}w + 16$; $m\angle 2 = 3w - 9$