

## Answers for Lesson 2-2, pp. 90–92 Exercises

---

1. If two segments are congruent, then they have the same length. It is true. Two segments have the same length if and only if they are congruent.
2. If  $2x - 5 = 19$ , then  $x = 12$ . It is true.  $x = 12$  if and only if  $2x - 5 = 19$ .
3. If a number is even, then it is divisible by 20. It is false since 4 is even but not divisible by 20.
4. If  $|x| = 3$ , then  $x = 3$ . It is false since  $|-3| = 3$  also.
5. In the United States, if it is Independence Day, then it is July 4th. It is true. In the United States, it is Independence Day if and only if it is July 4th.
6. If  $x^2 = 100$ , then  $x = -10$ . It is false since  $x$  can also equal 10.
7. If a line bisects a segment, then the line intersects the segment only at its midpoint. If a line intersects a segment only at its midpoint, then it bisects the segment.
8. If an integer is divisible by 100, then its last two digits are zeros. If an integer's last two digits are zeros, then it is divisible by 100.
9. If you live in Washington, D.C., then you live in the capital of the United States. If you live in the capital of the United States, then you live in Washington, D.C.
10. If two lines are parallel, then they are coplanar and do not intersect. If two lines are coplanar and do not intersect, then they are parallel.
11. If two angles are congruent, then they have the same measure. If two angles have the same measure, then they are congruent.



**Answers for Lesson 2-2, pp. 90–92 Exercises (cont.)**

---

- 30. No;  $\angle 1$  and  $\angle 2$  do not share a vertex.
- 31. No;  $\angle 1$  and  $\angle 2$  do not share a side, and are not suppl.
- 32. D
- 33. good definition
- 34.  $V$  is a counterexample.
- 35.  $L$  is a counterexample.
- 36. good definition
- 37. good definition
- 38. Angles are congruent if and only if they have equal measure.
- 39. The sum of the digits of an integer is divisible by 9 if and only if the integer is divisible by 9.
- 40. A number is a whole number if and only if it is a nonnegative integer.
- 41. If  $\angle A$  and  $\angle B$  are right angles, then  $\angle A$  and  $\angle B$  are supplementary angles.
- 42. If  $\angle A$  and  $\angle B$  are supplementary angles, then  $\angle A$  and  $\angle B$  are right angles.
- 43.  $\angle A$  and  $\angle B$  are right angles if and only if  $\angle A$  and  $\angle B$  are supplementary angles.
- 44.  $\angle A$  and  $\angle B$  are supplementary angles if and only if  $\angle A$  and  $\angle B$  are right angles.
- 45.  $\angle A$  and  $\angle B$  are right angles if and only if  $\angle A$  and  $\angle B$  are adjacent angles.
- 46.  $\angle A$  and  $\angle B$  are adjacent angles if and only if  $\angle A$  and  $\angle B$  are supplementary angles.

## Answers for Lesson 2-2, pp. 90–92 Exercises (cont.)

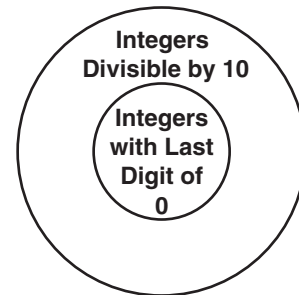
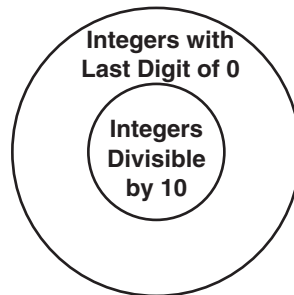
47.

Instrument	Amy	Bob	Carla
Drums		x	x
Guitar	x		x
Keyboard	x	x	

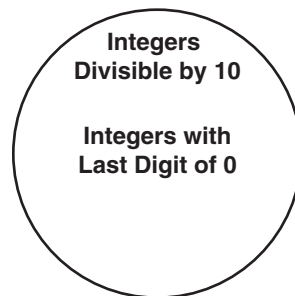
Amy plays the drums. Bob plays the guitar. Carla plays the keyboard.

48. a. If an integer is divisible by 10, then its last digit is 0. If an integer's last digit is 0, then it is divisible by 10.

b–c.



d.



- e. Answers may vary. Sample: The two circles coincide.
- f. Answers may vary. Sample: A good definition may be written as a biconditional because either of the coinciding circles of its Venn diagram can be the hypothesis of a conditional, and the other can be the conclusion.

49. Answers may vary. Sample: If the two hats in front of Alan were blue, he would know he was wearing red. Ben can tell from Alan's response that there are 1 or 2 red hats in front of Alan. Since Ben can't tell his hat color, Cal's hat must be red.