

14. True; consider the hypothesis. When two adjacent angles form a right triangle, the sum of their angle values is $m\angle 1 + m\angle 2 = 90^\circ$. By definition, the angles are then complementary.
15. The Law of Detachment cannot be used because the hypothesis of the conditional is not given to be true.
16. Given that the set of statements is true, we can then apply the midpoint formula to $C(2, -4)$ and $D(-3, 5)$ as follows.

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$M = \left(\frac{2 + (-3)}{2}, \frac{-4 + 5}{2} \right)$$

$$M = \left(-\frac{1}{2}, \frac{1}{2} \right)$$

The coordinates of the midpoint are $\left(-\frac{1}{2}, \frac{1}{2} \right)$.

17. The Law of Detachment cannot be used because the hypothesis of the conditional is not true.
18. Given that each set of conditionals is true, we apply the Law of Syllogism which states that:
- If $p \rightarrow q$ and $q \rightarrow r$ are true, then $p \rightarrow r$ is true.
- Applied to the given statements we have:
- If ray \overrightarrow{BD} bisects angle $\angle ABC$, then $m\angle ABC = m\angle DBC$.
19. The Law of Syllogism cannot be used because the hypothesis of one conditional is not the conclusion of the other.
20. Given that each set of conditionals is true, we apply the Law of Syllogism which states that:
- If $p \rightarrow q$ and $q \rightarrow r$ are true, then $p \rightarrow r$ is true. Applied to the given statements we have:
- If it is Tuesday night, Zachary goes to bed early.

- 21.** Since we are given that it is the day after Wednesday, we know that the first hypothesis is true. Applying the Law of Detachment, we know that the first conclusion is also true. Since the first conclusion is the hypothesis of the second statement, we follow the same rules and know that the second conclusion is also true. The Law of Syllogism states that if $p \rightarrow q$ and $q \rightarrow r$ are true, then $p \rightarrow r$ is true. Applying this, draw the following conclusions:

If it is Thursday, then he eats grilled chicken for dinner.

Charles has baseball practice. He eats grilled chicken for dinner.

- 22.** If the endpoints of a segment are $P(x_1, y_1)$ and $Q(x_2, y_2)$, then the distance from P to the midpoint is $\frac{1}{2}PQ$. The length of the segment is $PQ = 10$. The distance from P to the midpoint of \overrightarrow{PQ} is 5.