

2.4 Converse, Inverse, and Contrapositive

Answers

1. Not necessarily, A, B, and C need to be collinear in order for B to be a midpoint.
2. If B is the midpoint of \overline{AC} , then $AB = 5$ and $BC = 5$. This could be true, but we don't know the length of AC. $AB = BC$, but we cannot say they are 5 without knowing the length of AC.
3. If $AB \neq 5$ and $BC \neq 5$, then B is not the midpoint of \overline{AC} . Again, this could be true, but we don't know AC. Also, A, B and C might not be collinear.
4. If $AB \neq 5$ and $BC \neq 5$, then B is not the midpoint of \overline{AC} . It is the same as #3.
5. If an angle is less than 90° , then it is acute. *True.*
Biconditional: An angle is acute if and only if it is less than 90° .
6. If you are sun burnt, then you are at the beach. *False*, you could be anywhere there is sun (amusement park, baseball game, on a boat, etc).
7. If $x + 3 > 7$, then $x > 4$. *True.*
Biconditional: $x + 3 > 7$ if and only if $x > 4$.
8. If a U.S. citizen can vote, then he or she is 18 or more years old.
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9. If a whole number is prime, then its factors are 1 and itself.
If a whole number's factors are only 1 and itself, then it is prime.
10. If $2x = 18$, then $x = 9$.
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