AMA
LEARNING

Analytic Geometry: Practice Activity

Directions: Label the following statements as a converse, inverse, contrapositive, write a biconditional statement and a counterexample if applicable.

1. **Conditional Statement:** If an angle is less than 90 degrees, then it is acute.
   Converse/Inverse/Contrapositive: If an angle is acute, then it is less than 90 degrees.
   Biconditional?
   Counterexample?

2. **Conditional Statement:** If the animal is a giraffe, it is tall.
   Converse/Inverse/Contrapositive: If the animal is not tall, it is not a giraffe.
   Biconditional?
   Counterexample?

3. **Conditional Statement:** If a person is younger than 18 years old, then they are a teenager.
   Converse/Inverse/Contrapositive: If a person is not younger than 18 years old, then they are not a teenager.
   Biconditional?
   Counterexample?

4. **Conditional Statement:** If the animal is a cat, then it has paws.
   Converse/Inverse/Contrapositive: If the animal is not a cat, then it doesn't have paws.
   Biconditional?
   Counterexample?

5. **Conditional Statement:** If you take algebra, you are in high school.
   Converse/Inverse/Contrapositive: If you are not in high school, you do not take algebra.
   Biconditional?
   Counterexample?

Copyright © 2020 AMA Learning - All Rights Reserved.

Directions: Use the following events to translate the written statements into symbolic form.

X = It is Friday Y = There is a football game Z = I have

1. I have homework and there is a football game.

Symbolic Notation:

2. If it is not Friday, then I have homework.

Symbolic Notation:

3. There is a football game if and only if it is Friday.

Symbolic Notation:

4. If it is not Friday, then there is a football game and I do not have homework.

Symbolic Notation:

Directions: Use the same events as above to translate the symbolic form into written statements.

1. $X \cap Y$

Written Statement:

2. $\sim X \rightarrow \sim Z$

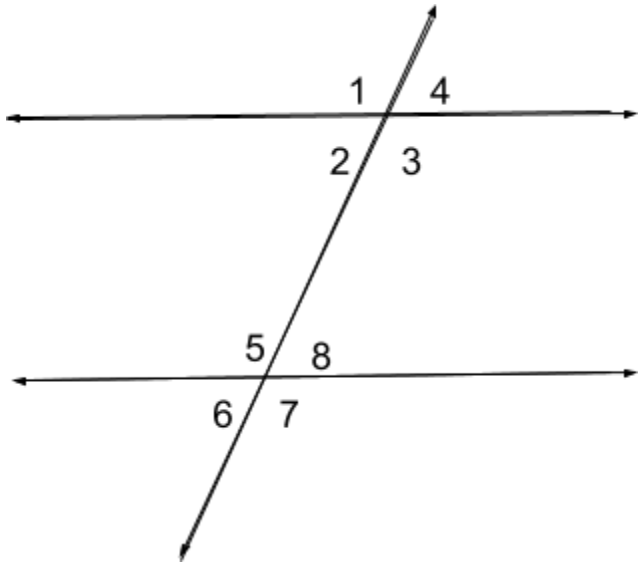
Written Statement:

3. $X \therefore Y$

Written Statement:

Copyright © 2020 AMA Learning - All Rights Reserved.

Directions: Look at the transversal and identify the corresponding, alternate interior, alternate exterior, and the consecutive interior angles.



Corresponding:

Alternate Interior:

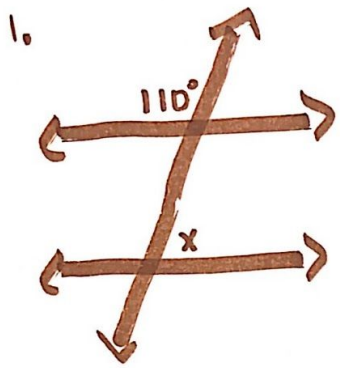
Alternate Exterior:

Consecutive Interior:

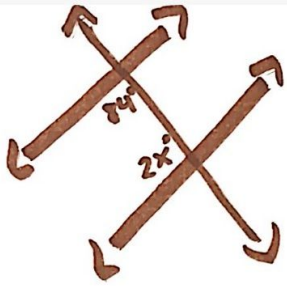
Copyright © 2020 AMA Learning - All Rights Reserved.

Directions: Look at the transversal and identify the value of x.

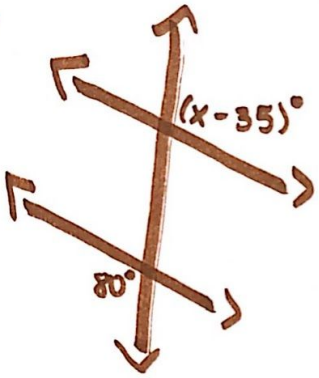
1.



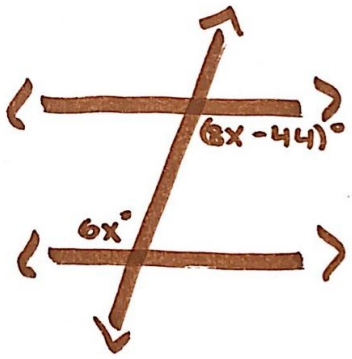
2.



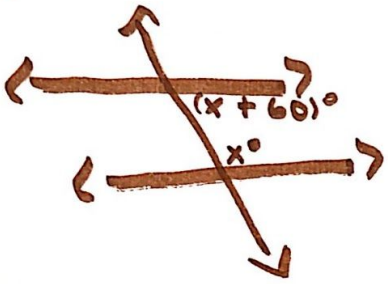
3.



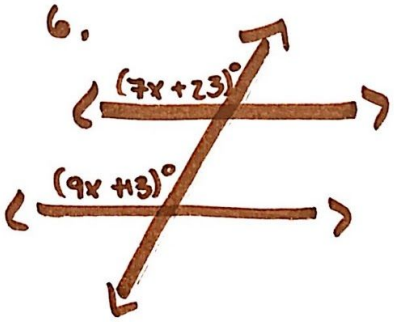
4.



5.



6.



Copyright © 2020 AMA Learning - All Rights Reserved.

AMA
LEARNING

Answers

Directions: Label the following statements as a converse, inverse, contrapositive, write a biconditional statement and a counterexample if applicable.

6. **Conditional Statement:** If an angle is less than 90 degrees, then it is acute.
   Converse/Inverse/Contrapositive: If an angle is acute, then it is less than 90 degrees.
   Biconditional? Yes: An angle is less than 90 degrees if and only if it is acute.
   Counterexample? None

7. **Conditional Statement:** If the animal is a giraffe, it is tall.
   Converse/Inverse/Contrapositive: If the animal is not tall, it is not a giraffe.
   Biconditional? No
   Counterexample? An elephant is tall.

8. **Conditional Statement:** If a person is younger than 18 years old, then they are a teenager.
   Converse/Inverse/Contrapositive: If a person is not younger than 18 years old, then they are not a teenager.
   Biconditional? No
   Counterexample? A 7 year old is not a teenager.

9. **Conditional Statement:** If the animal is a cat, then it has paws.
   Converse/Inverse/Contrapositive: If the animal is not a cat, then it doesn't have paws.
   Biconditional? No
   Counterexample? A dog has paws.

10. **Conditional Statement:** If you take algebra, you are in high school.
    Converse/Inverse/Contrapositive: If you are not in high school, you do not take algebra.
    Biconditional? No
    Counterexample? You can take algebra in middle school.

Copyright © 2020 AMA Learning - All Rights Reserved.

Directions: Use the following events to translate the written statements into symbolic form.

X = It is Friday Y = There is a football game Z = I have

5. I have homework and there is a football game.

Symbolic Notation: Z ∩ Y

6. If it is not Friday, then I have homework.

Symbolic Notation: ~X → Z

7. There is a football game if and only if it is Friday.

Symbolic Notation: Y ↔ X

8. If it is not Friday, then there is a football game and I do not have homework.

Symbolic Notation: ~X → Y ∩ ~Z

Directions: Use the same events as above to translate the symbolic form into written statements.

4. X ∩ Y

Written Statement: It is Friday and there is a football game.

5. ~X → ~Z

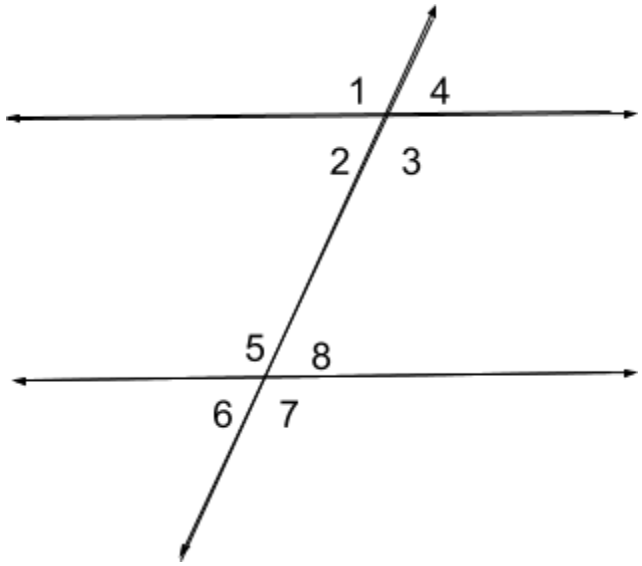
Written Statement: If it is not Friday, then I don't have homework.

6. X ∴ Y

Written Statement: It is Friday, therefore there is a football game.

Copyright © 2020 AMA Learning - All Rights Reserved.

Directions: Look at the transversal and identify the corresponding, alternate interior, alternate exterior, and the consecutive interior angles.



Corresponding: **1, 3 4, 2 5, 7 8, 6**

Alternate Interior: **2, 8 3, 5**

Alternate Exterior: **1, 7 4, 6**

Consecutive Interior: **2, 5 3, 8**

Directions: Look at the transversal and identify the value of x.

1. **x = 110**
2. **x = 48**
3. **x = 115**
4. **x = 22**
5. **x = 60**
6. **x = 80**

Copyright © 2020 AMA Learning - All Rights Reserved.