

## Ch 2 Exam Form B

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

Fill in each missing reason.

\_\_\_\_\_ 1. **Given:**  $9x - 3y = -8; x = -3$

**Prove:**  $\frac{-19}{3} = y$

$9x - 3y = -8; x = -3$       a. \_\_\_\_\_

$-27 - 3y = -8$       b. \_\_\_\_\_

$-3y = 19$       c. \_\_\_\_\_

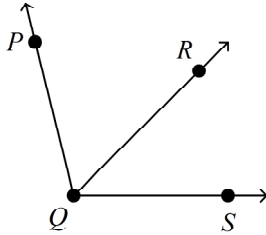
$y = \frac{-19}{3}$       d. \_\_\_\_\_

$\frac{-19}{3} = y$       e. \_\_\_\_\_

- a.
  - a. Given
  - b. Substitution Property
  - c. Addition Property of Equality
  - d. Addition Property of Equality
  - e. Symmetric Property of Equality
- b.
  - a. Given
  - b. Substitution Property
  - c. Addition Property of Equality
  - d. Division Property of Equality
  - e. Reflexive Property of Equality

- c.
  - a. Given
  - b. Substitution Property
  - c. Addition Property of Equality
  - d. Division Property of Equality
  - e. Symmetric Property of Equality
- d.
  - a. Given
  - b. Symmetric Property of Equality
  - c. Addition Property of Equality
  - d. Division Property of Equality
  - e. Reflexive Property of Equality

- \_\_\_\_\_ 2. **Given:**  $m\angle PQR = x - 1$ ,  $m\angle SQR = x - 1$ , and  $m\angle PQS = 100$ .  
Find  $x$ .



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$$m\angle PQR + m\angle SQR = m\angle PQS$$

$$x - 1 + x - 1 = 100$$

$$2x - 2 = 100$$

$$2x = 102$$

$$x = 51$$

a. \_\_\_\_\_

b. Substitution Property

c. Simplify

d. \_\_\_\_\_

e. Division Property of Equality

- Protractor Postulate; Subtraction Property of Equality
- Angle Addition Postulate; Addition Property of Equality
- Protractor Postulate; Addition Property of Equality
- Angle Addition Postulate; Subtraction Property of Equality

**Use the given property to complete the statement.**

- \_\_\_\_\_ 3. Division Property of Equality

If  $5x \cdot 8 = 16$ , then \_\_\_\_\_.

a.  $5x \div 8 = 2$

c.  $5x = 2$

b.  $16 = 5x \cdot 8$

d.  $16 = 5x \div 8$

- \_\_\_\_\_ 4. Substitution Property of Equality

If  $y = 9$  and  $8x + y = 11$ , then \_\_\_\_\_.

a.  $9 - y = 11$

c.  $8x + 9 = 11$

b.  $8x - 9 = 11$

d.  $8(9) - y = 11$

- \_\_\_\_\_ 5. Transitive Property of Congruence

If  $\overline{MN} \cong \overline{LK}$  and  $\overline{LK} \cong \overline{OP}$ , then \_\_\_\_\_.

a.  $\overline{MN} \cong \overline{LK}$

c.  $\overline{LK} \cong \overline{LK}$

b.  $\overline{LK} \cong \overline{OP}$

d.  $\overline{MN} \cong \overline{OP}$

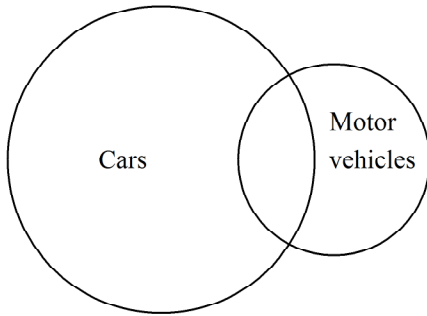
- \_\_\_\_\_ 6. Which biconditional is NOT a good definition?

- Three points are collinear if and only if they lie on the same line.
- An angle is straight if and only if its measure is 180.
- Two line segments are congruent if and only if they are of same length.
- An angle is obtuse if and only if its measure is greater than zero.

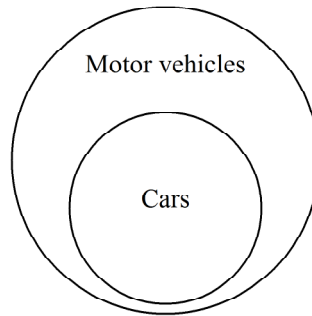
- \_\_\_\_\_ 7. Use the Law of Detachment to draw a conclusion from the two given statements. If not possible, write *not possible*.  
Driving is difficult if the weather is stormy.  
Driving is difficult.
- The weather is stormy.
  - If driving is difficult, then the weather is stormy.
  - The weather is not stormy.
  - not possible
- \_\_\_\_\_ 8. Another name for an *if-then* statement is a \_\_\_\_\_. Every conditional has two parts. The part following *if* is the \_\_\_\_\_ and the part following *then* is the \_\_\_\_\_.
- hypothesis; conclusion; conditional
  - conditional; hypothesis; conclusion
  - hypothesis; conditional; conclusion
  - conditional; conclusion; hypothesis
- \_\_\_\_\_ 9. Use the Law of Detachment to draw a conclusion from the two given statements.  
If two angles are supplementary, then the sum of their measures is  $180^\circ$ .  
 $\angle H$  and  $\angle G$  are supplementary.
- $\angle H$  is congruent to  $\angle G$ .
  - $m\angle H + m\angle G = 90$
  - $m\angle H + m\angle G = 180$
  - $m\angle H \neq m\angle G$
- \_\_\_\_\_ 10. Use the Law of Syllogism to draw a conclusion from the two given statements.  
If two lines intersect and form right angles, the lines are perpendicular.  
If two lines are perpendicular, they intersect and form  $90^\circ$  angles.
- If two lines intersect and form right angles, they intersect and form  $90^\circ$  angles.
  - The lines are perpendicular.
  - If two lines do not intersect and form  $90^\circ$  angles, they do not form right angles.
  - The lines intersect and form  $90^\circ$  angles.

11. Draw a Venn diagram to illustrate this conditional:  
Cars are motor vehicles.

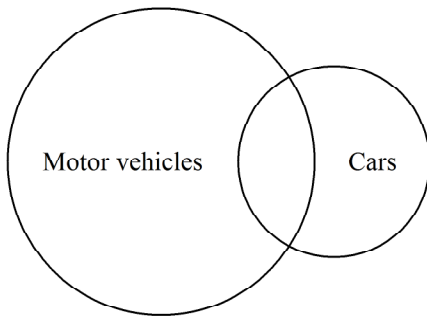
a.



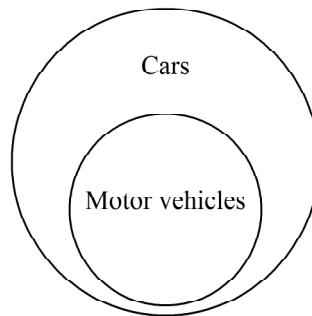
c.



b.



d.



12. What is the conclusion of the following conditional?

A number is divisible by 3 if the sum of the digits of the number is divisible by 3.

- a. If the sum of the digits of a number is divisible by 3, then the number is divisible by 3.
- b. The sum of the digits of the number is divisible by 3.
- c. The number is divisible by 3.
- d. The number is odd.

13. Which conditional has the same truth value as its converse?

- a. If  $x - 17 = 4$ , then  $x = 21$ .
- b. If an angle has measure 80, then it is acute.
- c. If  $x = 7$ , then  $|x| = 7$ .
- d. If a figure is a square, then it has four sides.

14. What is the converse of the following conditional?

If a point is in the first quadrant, then its coordinates are positive.

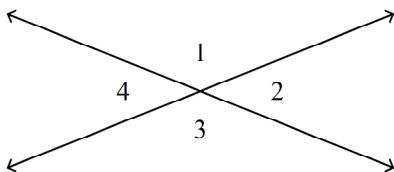
- a. If a point is in the first quadrant, then its coordinates are positive.
- b. If a point is not in the first quadrant, then the coordinates of the point are not positive.
- c. If the coordinates of a point are not positive, then the point is not in the first quadrant.
- d. If the coordinates of a point are positive, then the point is in the first quadrant.

15. Name the Property of Congruence that justifies the statement:

If  $XY \cong WX$ , then  $WX \cong XY$ .

- a. Symmetric Property
- b. Reflexive Property
- c. Transitive Property
- d. none of these

- \_\_\_\_\_ 16. Write this statement as a conditional in *if-then* form:  
All triangles have three sides.
- If a figure is a triangle, then it has three sides.
  - If a figure has three sides, then it is not a triangle.
  - If a figure is a triangle, then all triangles have three sides.
  - If a triangle has three sides, then all triangles have three sides.
- \_\_\_\_\_ 17. Name the Property of Congruence that justifies the statement:  
If  $\angle M \cong \angle N$  and  $\angle N \cong \angle O$ , then  $\angle M \cong \angle O$ .
- Transitive Property
  - Symmetric Property
  - Reflexive Property
  - none of these
- \_\_\_\_\_ 18. Which statement is a counterexample for the following conditional?  
If you live in Springfield, then you live in Illinois.
- Billy Jones lives in Chicago, Illinois.
  - Sara Lucas lives in Springfield.
  - Jonah Lincoln lives in Springfield, Illinois.
  - Erin Naismith lives in Springfield, Massachusetts.
- \_\_\_\_\_ 19. Name the Property of Equality that justifies the statement:  
If  $l = m$ , then  $m = l$ .
- Multiplication Property
  - Subtraction Property
  - Symmetric Property
  - Transitive Property
- \_\_\_\_\_ 20. Which statement is an example of the Symmetric Property of Equality?
- $k = p$
  - If  $k = p$  then  $p = k$ .
  - If  $p = q$  then  $p + s = q + s$
  - If  $p = q$  then  $p - s = q - s$
- \_\_\_\_\_ 21.  $m\angle 3 = 55$ . Find  $m\angle 1$ .

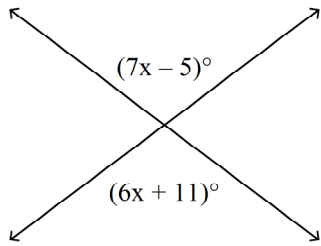


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- a. 45                      b. 55                      c. 125                      d. 135

- \_\_\_\_\_ 22. Which choice shows a true conditional with the hypothesis and conclusion identified correctly?
- If today is Wednesday, then tomorrow is Thursday.  
Hypothesis: Tomorrow is Thursday.  
Conclusion: Today is not Wednesday.
  - Tomorrow is Friday if today is Wednesday.  
Hypothesis: Today is Wednesday.  
Conclusion: Tomorrow is Friday.
  - Tomorrow is Thursday if today is Wednesday.  
Hypothesis: Today is Wednesday.  
Conclusion: Tomorrow is Thursday.
  - If today is Wednesday, then tomorrow is Thursday.  
Hypothesis: Tomorrow is Thursday.  
Conclusion: Today is Wednesday.
- \_\_\_\_\_ 23. For the following true conditional statement, write the converse. If the converse is also true, combine the statements as a biconditional.  
If  $x = 6$ , then  $x^2 = 36$ .
- If  $x^2 = 6$ , then  $x = 36$ . False
  - If  $x^2 = 36$ , then  $x = 6$ . True;  $x = 6$  if and only if  $x^2 = 36$ .
  - If  $x^2 = 36$ , then  $x = 6$ . True;  $x^2 = 36$  if and only if  $x = 6$ .
  - If  $x^2 = 36$ , then  $x = 6$ . False
- \_\_\_\_\_ 24. What is the converse and the truth value of the converse of the following conditional?  
If an angle is a right angle, then its measure is 90.
- If an angle has measure 90, then it is a right angle.  
True
  - If an angle is not a right angle, then its measure is not 90.  
True
  - If an angle has measure 90, then it is a right angle.  
False
  - If an angle is not a right angle, then its measure is 90.  
False
- \_\_\_\_\_ 25. A conditional can have a \_\_\_\_\_ of *true* or *false*.
- conclusion
  - hypothesis
  - counterexample
  - truth value
- \_\_\_\_\_ 26. Identify the hypothesis and conclusion of this conditional statement:  
If yesterday was Friday, then today is Saturday.
- Hypothesis: Yesterday was Friday. Conclusion: Today is not Saturday.
  - Hypothesis: Yesterday was Friday. Conclusion: Today is Saturday.
  - Hypothesis: Today is not Saturday. Conclusion: Yesterday was Friday.
  - Hypothesis: Today is Saturday. Conclusion: Yesterday was Friday.
- \_\_\_\_\_ 27. If possible, use the Law of Detachment to draw a conclusion from the two given statements. If not possible, write *not possible*.  
Statement 1: If  $x = 6$ , then  $7x - 6 = 36$ .  
Statement 2:  $x = 6$
- If  $7x - 6 = 36$ , then  $x = 6$ .
  - $7x - 6 = 36$
  - $x = 6$
  - not possible

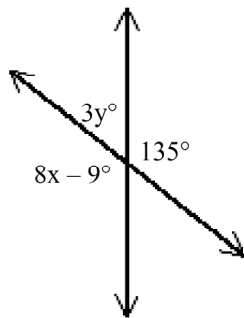
\_\_\_\_ 28. Find the value of  $x$ .



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- a. 16                      b. -16                      c. 73                      d. 107

\_\_\_\_ 29. Find the values of  $x$  and  $y$ .



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- a.  $x = 45, y = 135$                       c.  $x = 135, y = 45$   
 b.  $x = 15, y = 18$                       d.  $x = 18, y = 15$

\_\_\_\_ 30.  $\overline{BD}$  bisects  $\angle ABC$ .  $m\angle ABC = 7x$ .  $m\angle ABD = 3x + 21$ . Find  $m\angle DBC$ .

- a. 105                      b. 147                      c. 42                      d. 63