

Quiz 2.4 - 2.6 Review

Name Key
Date _____ Hour _____

State the property that justifies each statement.

- If $3(x + 2) = 6$, then $3x + 6 = 6$. **Distributive**
- If $10x = 20$, then $x = 2$. **Division**
- If $AB + 20 = 45$, then $AB = 25$. **Subtraction**
- If $3 = CD$ and $CD = XY$, then $3 = XY$. **Transitive**

Write a two-column proof.

5. If $5 = 2 - \frac{1}{2}x$, then $x = -6$

6. If $2x + 6 = 3 + \frac{5}{3}x$, then $x = -9$

S	R	S	R
1. $5 = 2 - \frac{1}{2}x$	1. Given	1. $2x + 6 = 3 + \frac{5}{3}x$	1. Given
2. $5 - 2 = 2 - \frac{1}{2}x - 2$	2. Subtraction	2. $2x + 6 - 6 = 3 + \frac{5}{3}x - 6$	2. Subtraction
3. $3 = -\frac{1}{2}x$	3. Substitution	3. $2x = \frac{5}{3}x - 3$	3. Substitution
4. $3(-2) = -\frac{1}{2}x(-2)$	4. Multiplication	4. $2x - \frac{5}{3}x = \frac{5}{3}x - 3 - \frac{5}{3}x$	4. Subtraction
5. $-6 = x$	5. Substitution	5. $+\frac{1}{3}x = -3$	5. Substitution
6. $x = -6$	6. Symmetric	6. $+\frac{1}{3}x(+3) = -3(+3)$	6. Multiplication
		7. $x = -9$	7. Substitution

Determine whether the following statements are ALWAYS, SOMETIMES, or NEVER true. State the postulate that can be used to determine this.

- The intersection of two lines can be a line. **Never 2.6**
- If plane T contains \overline{EF} and \overline{EF} contains point G , then plane T contains point G . **Always 2.5**
- For \overline{XY} , if X lies in plane Q and Y lies in plane R , then plane Q intersects plane R . **Sometimes 2.7**
- If points N , M , and O lie in plane T , then they are collinear. **Sometimes 2.4 or 2.5**
- \overline{GH} contains three noncollinear points. **Never 2.3; Definition of collinear**
- If three planes have a point in common, then they have a whole line in common. **Sometimes 2.3 + 2.7**
- There is exactly one plane that contains noncollinear points P , Q , and R . **Always 2.2**
- There are at least two lines through M and N . **Never 2.1**

Determine whether statement (3) follows from statements (1) and (2) by the Law of Detachment or the Law of Syllogism. If it does, state which law was used. If it does not follow, write *invalid*.

15. (1) If it snows outside, you will wear your winter coat.
 (2) It is snowing outside.
 (3) You will wear your winter coat.

Law of Detachment

16. (1) If a rectangle has four congruent sides, then it is a square.
 (2) A square has diagonals that are perpendicular.
 (3) A rectangle has diagonals that are perpendicular.

Invalid

17. (1) If you like pizza with everything, then you'll like Cardo's Pizza.
 (2) If you like Cardo's Pizza, then you are a pizza connoisseur.
 (3) If you like pizza with everything, then you are a pizza connoisseur.

Law of Syllogism

Write a two-column proof.

18. **Given:** T is the midpoint of \overline{SU}
 U is the midpoint of \overline{TV}
Prove: $\overline{ST} \cong \overline{UV}$

19. **Given:** N is the midpoint of \overline{MO}
Prove: $\overline{MN} \cong \overline{NO}$

S	R
1. T is MP of \overline{SU} U is MP of \overline{TV}	1. Given
2. $\overline{ST} \cong \overline{TU}$ and $\overline{TU} \cong \overline{UV}$	2. MP Theorem
3. $\overline{ST} \cong \overline{UV}$	3. Transitive

S	R
1. N is MP of \overline{MO}	1. Given
2. $MN = NO$	2. Def'n of MP
3. $\overline{MN} \cong \overline{NO}$	3. Def'n of \cong

1. Which law can be used to determine that statement (3) is a valid conclusion to statements (1) and (2)?
(1) All dogs like biscuits.
(2) Sammy is a dog.
(3) Sammy likes biscuits.
 A. Law of Detachment B. Law of Syllogism
C. Law of Converse D. Statement (3) does not follow.
2. Which law can be used to determine that statement (3) is a valid conclusion of statements (1) and (2)?
(1) All sparrows fly. (2) All robins fly. (3) All sparrows are robins.
A. Law of Detachment B. Law of Syllogism
C. Law of Converse D. Statement (3) does not follow.
3. Which best describes the statement *If two points lie in a plane, then the entire line containing those points lies in that plane?*
 A. always true B. sometimes true C. never true D. cannot tell
4. Choose the property that justifies the statement.
If $x = y$ and $y = z$, then $x = z$.
A. Conditional B. Transitive C. Symmetric D. Reflexive
5. Choose the property that justifies the following statement.
If $3AB = CD$, then $AB = \frac{1}{3}CD$.
A. Addition B. Subtraction C. Division D. Substitution
6. Choose the property that justifies the statement.
If $\overline{GH} \cong \overline{FD}$ and $\overline{FD} \cong \overline{CB}$, then $\overline{GH} \cong \overline{CB}$.
A. Reflexive B. Symmetric
 C. Transitive D. Def. of \cong segments
7. Which best describes the statement *A plane contains at least 3 points not on the same line?*
 A. always true B. sometimes true
C. never true D. cannot tell

8. If $3x = 6$, then $x = 2$.
 A. Addition B. Subtraction C. Multiplication **D. Division**
9. If $m\angle A = 10$ and $m\angle B = 10$, then $m\angle A = m\angle B$.
 A. Reflexive B. Symmetric **C. Substitution** D. Equality
10. If $\overline{PS} \cong \overline{WX}$, then $PS = WX$.
 A. Reflexive B. Symmetric
C. Definition of congruent segments D. Transitive

11. Determine the number of line segments that can be drawn connecting each pair of points.



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12. Complete the proof by supplying the missing information.

If $2x - 7 = 4$, then $x = \frac{11}{2}$.

Statements	Reasons
1. $2x - 7 = 4$	1. Given
2. $2x - 7 + 7 = 4 + 7$	2. Addition Property
3. $2x = 11$	3. Substitution
4. $\frac{2x}{2} = \frac{11}{2}$	4. Division
5. $x = \frac{11}{2}$	5. Substitution

13. Complete the proof by supplying the missing information.

If $\frac{x}{3} + 1 = -4$, then $x = -15$.

Statements	Reasons
1. $\frac{x}{3} + 1 = -4$	1. Given
2. $\frac{x}{3} + 1 - 1 = -4 - 1$	2. Subtraction Property
3. $\frac{x}{3} = -5$	3. Substitution
4. $\left(\frac{x}{3}\right)3 = (-5)(3)$	4. Multiplication
5. $x = -15$	5. Substitution