Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Geometry, Mrs. Sulkes

A Midterm Review – Blank Tests from Q1 and Q2

Test #1 Q1, Chapter 1

NO CALCULATOR. *Show any necessary work for full credit. Leave answers in simplest radical form. Diagrams are not to scale, unless stated so.*

1. Write True or False in the blanks below. If false, explain why or correct the statement

1. \_\_\_\_\_\_\_\_\_\_\_\_ If C is between X and Y, then XC=CY.

b. \_\_\_\_\_\_\_\_\_\_\_\_\_ Through any three points there is exactly one plane.

c. \_\_\_\_\_\_\_\_\_\_\_\_\_ Through a line and a point not on the line there is exactly one plane.

d. \_\_\_\_\_\_\_\_\_\_\_\_ If points A and B are in plane *E*, then must also be in plane *E*.

e. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ The sum of two acute angles can equal 180 degrees.

f. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ If D is between B and F, then  and  are opposite rays.

2. Draw a diagram such that bisects at point P, and E is midpoint of . Then use the congruent symbol to write all pairs of congruent segments in your diagram.

3. Given: Segment AE, where D is the midpoint of  with the following coordinates.

A: 20 D: 32

1. Determine the coordinate of E.
2. Determine AE.

4. Fill in the blank to make each statement true.

a. If M is between K and Y, KM + YM = \_\_\_\_\_\_\_\_\_\_\_ by Segment Addition Postulate.

b. If the coordinate of A is -3, and AB = 4, then the coordinate of B can be \_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_.

c. If B is in the interior of <DOC, and m<DOC = 40 degrees, and m<COB = 17 degrees, then m<DOB = \_\_\_\_\_\_\_\_\_.

d. If S is the midpoint of , then \_\_\_\_\_\_\_ .

e. Through any two \_\_\_\_\_\_\_\_\_\_\_\_\_\_ there is exactly one line.

f. If two lines intersect, then exactly one \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ contains the lines.

5. Find the coordinate of M, the midpoint of , for A:  and C: .

6. Given P is the midpoint of , P: , J: -3, R: , find the numerical coordinate of R.

7. Given:  bisects ; ,  Find .

R

Q

2

1

P

S

8. Given F-G-T such that  , and F: -1, find:

1. GT
2. the coordinate of G

9. Given: , . Find: x

E

D

2

1

A

B

C

10. Given  and B: 3 and A: 5, name the coordinate of a point that is 3 units from A and not on .

**Test #2, Q1, Chapter 1 and Logic**

2. If M is the midpoint of  and AM = 2x2 – 7x and AB =, find all possible values of AB. Draw a labeled diagram and write an equation as part of your work.

3. Fill in the blanks with the logically equivalent symbolic statement, then name the property you used. You may not use the same property twice.

Property Name

a)  \_\_\_\_\_\_\_\_\_\_\_\_

b)  \_\_\_\_\_\_\_\_\_\_\_\_

c)  \_\_\_\_\_\_\_\_\_\_\_\_

d)  \_\_\_\_\_\_\_\_\_\_\_\_

4. Write True or False for the following statements. If false, then explain why.

a) \_\_\_\_\_\_\_\_\_\_\_ \_\_\_ If 3 points are coplanar, then they are collinear.

b) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ A biconditional statement is false if  and  are both false.

c) \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_ The conjunction of two tautological statements is also a tautology.

d) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Given a true conditional statement with its hypothesis as true, the conclusion must also be true.

e) \_\_\_\_\_\_\_\_\_\_\_ A conditional statement and its converse are logically equivalent.

f) \_\_\_\_\_\_\_\_\_\_\_ Disjunctive Syllogism guarantees that if a disjunction of two statements is true and one of its statements is false, then the other statement must be true.

g) \_\_\_\_\_\_\_\_\_\_\_\_ The biconditional of two statements, one which is a tautology and one which is a contradiction, is also a tautology.

5. Complete a truth table for each of the following. Show each column neatly that leads to your final truth values.

a) 

b) 

6. Given: If I eat dinner, then I am satisfied.

1. Write the converse of the given statement.
2. Write the inverse of the given statement.
3. P: I eat dinner

Q: I am satisfied

Translate the following into symbols:

i) “It is not the case that I don’t eat dinner or I am satisfied.”

ii) “I don’t eat dinner and I am satisfied.”

7. Determine whether or not each logical argument is valid. If yes, state the rule that justifies the argument. If no, write NOT VALID.

a)  b. 

c)  d) 

8. Make a valid conclusion from the given statements. Then state the rule you used to make that conclusion.

a) 

b) 

c) If I am hungry, then I will eat food.

I did not eat food.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Therefore, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Rule: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Test #3 Q1, Logic and Proofs**

NO CALCULATOR. *Show any necessary work for full credit.*

1. Given M is the midpoint of ,  and , find 

2.  bisects , , and , find the value of . Draw a labeled diagram as part of your solution.

3. Translate each sentence into logic symbols. Then decide if the argument is VALID. If so, then state the property. If not, then write “not valid”.

1. If I don’t like eating out, then I like home-cooked meals. I don’t like home-cooked meals. Therefore, I like eating out.
2. If I am a terrific math student, then I can do logic problems. If I can do logic problems, then I can do algebra problems. Therefore, if I am a terrific math student, then I can do algebra problems.

4. Complete the truth table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| P | Q |  |  |  |  |
| T | T |  |  |  |  |
| T | F |  |  |  |  |
| F | T |  |  |  |  |
| F | F |  |  |  |  |

5. Fill in the blanks to complete the proof:

Statements Reasons

|  |
| --- |
| 1.  1. \_\_\_\_\_\_\_\_\_\_\_  2.  2. \_\_\_\_\_\_\_\_\_\_\_\_  3. \_\_\_\_\_\_\_\_\_ 3. MT, 1 and 2  4.  4. \_\_\_\_\_\_\_\_\_\_\_\_\_  5. \_\_\_\_\_\_\_\_\_\_\_ 5. \_\_\_\_\_\_\_\_\_\_\_\_\_  6.  6. Given  7. \_\_\_\_\_\_\_\_\_\_\_\_\_ 7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Given: 

Prove: 

6. Prove using statements and reasons columns.

Given: 

Prove: 

7. Answer true or false. If false, explain why:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Adjacent angles are congruent.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ If a conditional statement is true, then its inverse is also true.
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_The biconditional of two logically equivalent statements is a tautology.
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ The empty set is a subset of every set.

8. Write a statement that is logically equivalent to each of the following and then tell which property you used.

1.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

9. State whether the argument is valid. If so, state the rule. If not, state “not valid”.

1.  b. 

10. Fill in the following proof:

Given: bisects  Statements Reasons

|  |
| --- |
| 1. bisects  1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  2.  2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. Angle Addition Postulate  4.  4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

Prove: 

A

B

C

D



E

1

2

3

**Test #1 Q2, Chapter 3 (Parallel Lines)**

**NO CALCULATOR. *Show any necessary work for full credit.***

For #1 – 6, fill in the blanks to make each statement true.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_lines are noncoplanar lines.

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_lines are coplanar lines that do not intersect.

3. If two parallel lines are cut by a transversal, then same-side interior angles are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. If M is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of segment AB, then AM = ½ AB.

5. Supplementary angles are two angles whose measures have the sum of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

6. If two lines are cut by a transversal and alternate interior angles are congruent, then the lines are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

For #7 - 11 , write the postulate, theorem, or definition that is exemplified by each of the following statements.

7. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_If 2 lines are parallel and cut by a transversal, then the corresponding angles are congruent.

8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_If  is a complement of  and  is a complement of , then .

9.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ If  and  are supplements, then 

10. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ If bisects , then .

For #12 -15, write always, sometimes, or never in the blank.

12. Two lines perpendicular to a third line are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ perpendicular to each other.

13. If two lines are cut by a transversal and alternate interior angles are congruent, then the lines are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ parallel.

14. Two planes that do not intersect are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_parallel.

15. Two adjacent angles are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ supplementary.

Given jk, use the diagram below to answer #16 – 19. Note: use only the angles given.

j

2

1

3

5

8

7

4

9

k

6

16. Name one pair of vertical angles. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17. Name two pairs of angles that are congruent. Then name the postulate, theorem, or defintion that justifies each congruent pair of angles.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by \_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

18. Are  and  congruent? If yes, state the theorem or postulate that justifies it. If no, then explain why not.

19. Name two pairs of supplementary angles. Then name the postulate, theorem, or definition that justifies each pair of supplementary angles. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by \_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by \_\_\_\_\_\_\_\_\_\_\_\_\_\_

20. Find the values of *x* and *y* that make  and . Show any algebraic work.

(5x+3)

48

6y

21. Find *x* and *y.* Show all algebraic work.

3x-2y

60

72

3x+2y

22. The complement of an angle is two more than three times the angle. Find the measure of the angle and its complement.

23. Complete the following proof.

Given:  Statements Reasons

Prove: 

1

2

*a*

*b*

3

4

24. Complete the following proof. Statements Reasons

Given:  is supplementary to 

 is supplementary to 

Prove: 

j

2

1

3

*k*



**Test #2 Q2, Chapter 3**

**CALCULATOR. *Show any necessary work to justify your answers. You must show work to receive credit.***

For #1 – 5, write always, sometimes, or never in the blanks provided.

1. Two intersecting lines are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_coplanar.

2. A regular polygon is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ equiangular.

3. The measure of one interior angle of a triangle\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ equals the sum of the measures of the other two angles of the triangle.

4. In a triangle, there is\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ two obtuse angles.

5. If two lines are cut by a transversal, then the alternate interior angles are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ congruent.

6. Find :

62



120

7. Find  and :



125

75



8. Given , find and :

32







40

1

3

9. Given:  and , find .

1

2

3

4

10. Find the sum of the exterior angles of an octagon.

11. Find the sum of the interior angles of a 13-gon.

12. The sum of the measures of the interior angles of a polygon is two times the sum of the measures of its exterior angles. Find the number of sides of the polygon.

13. Fill in the following table for **regular** polygons. Show the work below.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Number of sides (n) | 4 | 5 |  |  |
| Each interior angle |  |  | 120 |  |
| Each exterior angle |  |  |  | 45 |

14. Complete the following proof. Number more angles if you wish

A

P

C

N

D

B

L1

L2

M

Given: L1//L2, bisects , bisects 

Prove: //

Statements Reasons

15. Complete the following proof. Number more angles if you wish.

Given: , is a complement of 

Prove: 

1

2

3

S

R

Q

P

Statements Reasons

**Pledge:**

**Test #3 Q2 – Chapter 4**

**NO CALCULATOR. *Show any necessary work for full credit.***

1. Name the five ways that you can prove two triangles are congruent and draw labeled figures for each one.

For #2 – 5, decide if the two triangles are congruent. If they are, write **ALL** of the theorems and postulates you can use (there may be more than one answer for each pair). If the triangles are not congruent, write “not congruent.”

2.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

For #6 – 8, answer always, sometimes or never.

6. *AAA*  is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_a valid congruence pattern for proving triangles congruent.

7. The sum of the exterior angles of any polygon is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 360 degrees.

8. If two sides of one triangle are congruent to two sides of a second triangle, then the third sides are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ congruent.

For #9-11, use the figure below to answer the questions.

C

D

6

5

7

4

3

1

2

B

F

E

A

9. If , then name two congruent angles. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

10. If , then name two congruent angles. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. If , then name two congruent sides. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

For #12 – 15, find the value of *x*. Show the analytical work that leads to your answer.

12.

2x+1

15

25

25

27

13.

30

2x

14.

64

x

15.

50

45

(3x-1)

16. For the proof below, supply the missing statements and reasons.

B

A

Given: , 

2

1

Prove: 

3

4

D

C

Statements Reasons

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 1. Given

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. AC = AC 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 3. AIA

4. \_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_ 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5.  5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

17. Given the diagram below, name two **different** pairs of **overlapping** congruent triangles. Then state which congruence method was used to prove the two triangles are congruent.

Given: DE = FG , m <FEG=m<DFE, EG = FD

F

E

H

D

G

1.  by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2.  by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

18. Provide a proof:

C

D

Given: , , 

Prove: 

B

A

Statements Reasons