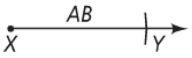
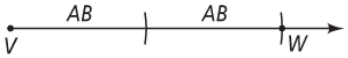
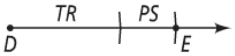
Geometry Practice Answers // Mr. Fitch // 2016-2017

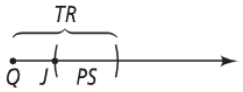
p46 #4, 7-12 [22,23] — **10 points each**

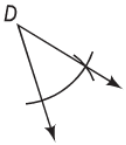
4. straightedge and compass

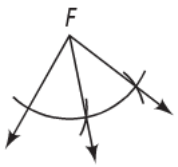
7. 

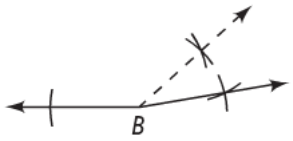
8. 

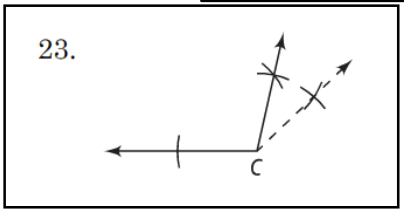
9. 

10. 

11. 

12. 

22. 

23. 

p85 #6-14, 20-23, 27, 28, 31-36 — **4 points each**

6. Each term is twice the previous term, so the next two terms are 80 and 160.

7. The next two terms are 36 and 49.

8. The pattern is to add $-2, +3, -4, +5, \ldots$. The next two terms are $3-6=-3$ and $-3+7=4$.

9. The next two terms are $\frac{1}{16}$ and $\frac{1}{32}$.

10. The next two terms are $\frac{1}{5}$ and $\frac{1}{6}$.

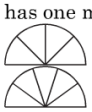
11. Each term is 3 less than the previous term, so the next two terms are 3 and 0.

12. Each term is the first letter of the counting numbers: *one, two, three,....*, so the ninth and tenth terms are N and T.

13. Each term is the first letter of the months *January, February, March,....*, so the sixth and seventh terms are J and J.

14. The pattern is multiply by 2, then multiply by 3, then multiply by 4, then multiply by 5,.... The next two terms are $120 \times 6 = 720$ and $720 \times 7 = 5040$.

20. The semicircles are being divided into equal pieces. Each term has one more division.



21. Because every third shape is blue, the fifteenth shape will be blue.

22. Because every fourth shape is a star, the twelfth shape will be a star.

23. Because every third shape is blue, the thirtieth shape will be blue.

27.

Addends	Sum
1 + 3	4
1 + 5	6
3 + 5	8
3 + 7	10

The sum of two odd numbers is even.

28.

Addends	Sum
2 + 1	3
2 + 3	5
4 + 3	7
4 + 5	9

The sum of an even and an odd number is odd.

31. 1 mile.

32. 75°F.

33. Answers may vary. Sample:
$\angle 1$ and $\angle 2$ could both be right angles.

34. Answers may vary. Sample:
$\triangle ABC$ could be a right triangle with right $\angle B$.

35. Answers may vary. Sample:
$-2 + -3 = -5$ and -5 is less than both -2 and -3.

36. Answers may vary. Sample:
$\frac{1}{4} \cdot \frac{1}{2} = \frac{1}{8}$, and since $\frac{1}{8} < \frac{1}{2}$ and $\frac{1}{8} < \frac{1}{4}$, the statement is false.

p46 #6, 13, 14, 17, 21, 34, 36 — **12 points each**

6. Since $\overleftrightarrow{XY}$ is perpendicular to and contains the midpoint of $\overline{AB}$, then $\overleftrightarrow{XY}$ is the perpendicular bisector of $\overline{AB}$, and not the other way around.

21a. A segment has exactly one midpoint; using the Ruler Postulate (Postulate 1-5), each point corresponds with exactly one number, and exactly one number represents the length of a segment.

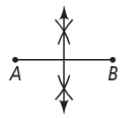
21b. A segment has infinitely many bisectors because many lines can be drawn through the midpoint.

21c. In the plane with the segment, there is one perpendicular bisector because only one line in that plane forms a right angle with the given line at the midpoint.

21d. Consider the plane that is the perpendicular bisector of the segment. Any line in the plane that contains the midpoint of the segment is a perpendicular bisector of the segment, and there are infinitely many such lines.

36. D

13.



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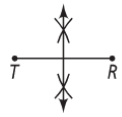
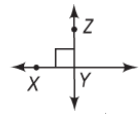
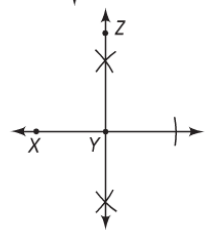
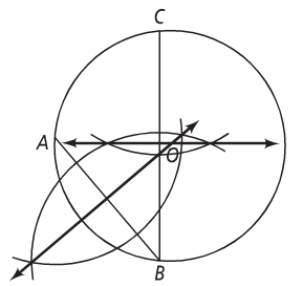


17. Answers may vary. Sample:





34a.



34b. See answer in part (a).

34c. Point O is the center of the circle.

p93 #5-7, 9, 12, 14, 16, 17 — **10 points each**

5. Hypothesis: You are an American citizen.
Conclusion: You have the right to vote.

6. Hypothesis: A figure is a rectangle.
Conclusion: It has four sides.

7. Hypothesis: You want to be healthy.
Conclusion: You should eat vegetables.

9. If $3x - 7 = 14$, then $3x = 21$.

12. If a point is in the first quadrant of a coordinate plane, then both coordinates of that point are positive.

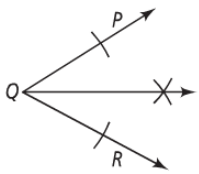
14. If a number is a whole number, then it is an integer.

16. True.

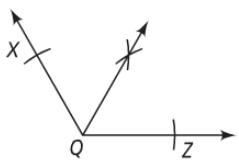
17. False; Mexico.

p46 #15, 16, 18 [20, 26] — **30 points each**

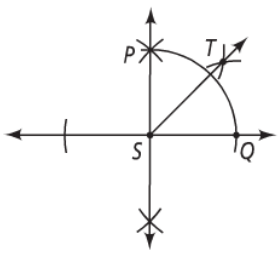
15.



16.



18.



Bonus Answers will be provided in class

p93 #20-22, 47, 48 [30, 43-45]

20 points each

20. Converse: "If you play football, then you are a quarterback."
Inverse: "If you are not a quarterback, then you do not play football."
Contrapositive: "If you do not play football, then you are not a quarterback."
The conditional and the contrapositive are true. The converse and the inverse are false, and a counterexample could be the person who plays tailback on football team.

21. Conditional: "If a person is a pianist, then that person is a musician."
Converse: "If a person is a musician, then that person is a pianist."
Inverse: "If a person is not a pianist, then that person is not a musician."
Contrapositive: "If a person is not a musician, then that person is not a pianist."
The conditional and the contrapositive are true. The converse and inverse are false, and a counterexample is a percussionist.

22. Converse: "If $x = 5$, then $4x + 8 = 28$"
Inverse: "If $4x + 8 \neq 28$, then $x \neq 5$."
Contrapositive: "If $x \neq 5$, then $4x + 8 \neq 28$."
All four statements are true.

47. A

48. H

30 is one bonus
43/44/45 together are one bonus

Bonus Answers will be provided in class

p101 #2, 4-7, 9, 10, 14, 16, 20, 22, 24, 29, 50

7 points each

2. This month is June if and only if next month is July.

4. The prefix *bi-* means "two."

5. Answers may vary. Sample answer: The word *gigantic* is not precise.

6. The second statement is a better definition. A counterexample for the first statement is any two nonadjacent right angles.

7. Converse: If two segments are congruent, then they have the same length; true. Biconditional: Two segments have the same length if and only if they are congruent.

9. Converse: If a number is even, then it is divisible by 20; false.

10. Converse: If $|x| = 3$, then $x = 3$; false.

14. If an integer is divisible by 100, then its last two digits are zeros. If an integer's last two digits are zeros, then it is divisible by 100.

16. If a polygon is a triangle, then it has exactly 3 sides. If a polygon has exactly 3 sides, then it is a triangle.

20. Two angles are complementary if and only if the measures of the angles have a sum of 90.

22. Not reversible.

24. Not reversible; some animals with whiskers are not cats.

29. Yes.

50. I

p110 #6-10, 26-29, 36-38 [30]

8 points each

6. Dr. Ngemba should take an X-ray.
7. No conclusion is possible.
8. Points X, Y, and Z are collinear.
9. No conclusion is possible; the hypothesis has not been satisfied.
10. Rashid must study hard.

26. If something is a national park, then it is interesting; Mammoth Cave is an interesting place.
27. If a figure is a square, then it is a rectangle; $ABCD$ is a rectangle.
28. If you are in Key West, Florida, then the temperature is always above 32° F; no conclusion is possible because the hypothesis is not satisfied.
29. If you are a high school student, then you like art; no conclusion is possible because the hypothesis is not satisfied.

36. $\angle AOB$, $\angle BOA$
37. $\angle BOC$, $\angle COB$
38. $\overline{OB}$

p110 #11-17, 33 [31]

12 points each

11. If an animal is a Florida panther, then it is endangered.
12. No conclusion is possible; the same statement does not appear as the conclusion of one conditional and as the hypothesis of the other conditional.
13. If a line intersects a segment at its midpoint, then it divides the segment into two congruent segments.
14. If you read often, then you will improve your score on a standardized test.
15. Alaska's Mount McKinley is the highest mountain in the United States.

16. Tracy lives in the 11th state to enter the Union.
17. If you are studying botany, then you are studying a science (Law of Syllogism only). No conclusion can be made about Shanti.
33. B

Bonus Answers will be provided in class

p117 #6-19, 31-33 **5 points each**

6a. Distributive Prop.

6b. Subtr. Prop. of Eq.

6c. Div. Prop. of Eq.

7a. def. of supplementary angles

7b. Subst. Prop. of Eq.

7c. Distributive Prop.

7d. Subtr. Prop. of Eq.

7e. Div. Prop. of Eq.

8a. Segment Add. Post.

8b. Subst. Prop. of Eq.

8c. Distributive Prop.

8d. Distributive Prop.

8e. Subtr. Prop. of Eq.

8f. Div. Prop. of Eq.

9. Subtr. Prop. Of Eq.

10. Div. Prop. Of Eq.

11. Sym. Prop. of Congruency

12. Add. Prop. of Eq.

13a. Given

13b. A midpt. divides a segment into two congruent segments.

13c. Substitution Property of Equality

13d. $2x = 12$

13e. Div. Prop. of Eq.

14. $YU = AB$.

15. $\angle K$.

16. $\angle POR$.

17. 3

18. $EF + 7$.

19. $\angle XYZ \cong \angle WYT$.

31. 153.86

32. 82

33. 58

p124 #3, 5, 6-12, 17, 19, 20, 27, 28, 37, 42

6 points each

3. $\angle B \cong \angle C$ because both are suppl. to $\angle A$ and if two angles are suppl. to the same angle, then they are congruent.

5. Answers may vary. Sample:
A postulate is a statement that is assumed to be true, while a theorem is a statement that is proved to be true.

6. 20

7. $x = 38$, $y = 104$

8. 30

9. 60, 60

10. 76, 104, 76

11. 120, 120

12a. Vert. Angles Thm.

12b. $\angle 1 \cong \angle 6$

12c. Vert. Angles Thm.

12d. Trans. Prop. of congruency

17. $x = 14$, $y = 15$; $3x + 8 = 50$, $5x - 20 = 50$; $5x + 4y = 130$

19. $x = 50$, $y = 50$

20. Because vert. angles are congruent, $\angle AOD \cong \angle BOC$ and $\angle AOB \cong \angle DOC$. Also, all of the straight angles are congruent because they each have a measure of 180.

27. $m\angle A = 30$, $m\angle B = 60$

28. $m\angle A = 120$, $m\angle B = 60$

37. 20

42. Trans. Prop. of Congruency

p96 #1-4, 6-9

12 points each

1. We will go to the beach, and we will go out to dinner.

2. We will go to the beach, or we will go out to dinner.

3. Either we will go to the beach or we will go out to dinner and go to the movies.

4. We either will go to the beach or out to dinner, and we will go to the movies.

6. True.

7. True.

8. False.

9. True.