GEOMETRY – REVIEW FOR MIDTERM

The midterm exam for period 3 is on 1/28, 8:00AM to 9:45AM. The exam will consist of approximately 40 multiple-choice and 6 open-ended questions. Now is the time to start studying!!!

TO PREPARE…

1) Reviews all previous assessments.

2) Complete the following review problems attached to this document. They can also be found in the extra practice section in the back of the text:

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3) Go to the Prentice Hall website and do the online quizzes that correspond to our textbook:


4) Go to the Prentice Hall website and check out the “homework video tours” that correspond to each chapter in our textbook if you need further explanation:


5) Come for extra help with specific questions from above. Extra help is available Monday, Tuesday and Thursday after school until 3:05.
Extra Practice

Lesson 1-1 Find the next two terms in each sequence.

1. 12, 17, 22, 27, 32, . . .
2. 1, 1.1, 1.11, 1.111, 1.1111, . . .
3. 5000, 1000, 200, 40, . . .
4. 1, 12, 123, 1234, . . .
5. 3, 0.3, 0.03, 0.003, . . .
6. 1, 4, 9, 16, 25, . . .

Lesson 1-2 and 1-3 Write true or false.

7. A, D, E are coplanar.
8. \( \overrightarrow{AC} \) and \( \overrightarrow{FE} \) are coplanar.
9. A, B, E are coplanar.
10. D, A, B, E are coplanar.
11. \( \overrightarrow{FC} \parallel \overrightarrow{EF} \)
12. plane ABC \parallel plane FDE
13. \( \overrightarrow{BC} \) and \( \overrightarrow{DF} \) are skew lines.
14. \( \overrightarrow{AD} \) and \( \overrightarrow{EB} \) are skew lines.
15. \( \overrightarrow{DE} \parallel \overrightarrow{CF} \)
16. D, E, and B are collinear.

Lesson 1-4 and 1-5 Use the figure at the right for Exercises 17-22.

17. If BC = 12 and CE = 15, then BE = \( \).
18. \( \) is the angle bisector of \( \).
19. Algebra BC = 3x + 2 and CD = 5x – 10. Solve for x.
20. Algebra If AC = 5x – 16 and CF = 2x – 4, then AF = \( \).
21. \( \angle BCG = 60, \angle GCA = \) \( \), and \( \angle BCA = \) \( \).
22. \( \angle ACD = 60 \) and \( \angle DCH = 20 \). Find \( \angle HCA \).

Lesson 1-5 Make a diagram larger than the given one. Then do the construction.

23. Construct the perpendicular bisector of \( \overline{AB} \).
24. Construct \( \angle A \) so that \( \angle A = \angle 1 + \angle 2 \).
25. Construct the angle bisector of \( \angle 1 \).
26. Construct \( \overline{FG} \) so that \( FG = AB + CD \).

Lesson 1-6 (a) Find the distance between the points to the nearest tenth.
(b) Find the coordinates of the midpoint of the segments with the given endpoints.

27. A (2, 1), B (3, 0)
28. R (5, 2), S (–2, 4)
29. Q (–7, –4), T (6, 10)
30. C (–8, –1), D (–5, –11)
31. J (0, –5), N (3, 4)
32. Y (–2, 8), Z (3, –5)

Lesson 1-7 Find the perimeter (or circumference) and area of each figure.

33. 14 in.
34. 1 cm
35. 3 m
36. 4 in.
Lessons 2-1 and 2-2  For each of the statements, write the conditional form and then the converse of the conditional. If the converse is true, combine the statements as a biconditional.

1. The number one is the smallest positive square.
2. Rectangles have four sides.
3. A square with area 100 m² has sides that measure 10 m.
4. Two numbers that add up to be less than 12 have a product less than 37.
5. Three points on the same line are collinear.

Lesson 2-2  Is each statement a good definition? If not, find a counterexample.

6. A circle with center O and radius r is defined by the set of points in a plane a distance r from the point O.
7. A plane is defined by two lines.
8. Segments with the same length are congruent.

Lesson 2-3  Using the statements below, apply the Law of Detachment or the Law of Syllogism to draw a conclusion.

9. If Jorge can’t raise money, he can’t buy a new car. Jorge can’t raise money.
10. If Shauna is early for her meeting, she will gain a promotion. If Shauna wakes up early, she will be early for her meeting. Shauna wakes up early.
11. If Linda’s band wins the contest, they will win $500. If Linda practices, her band will win the contest. Linda practices.
12. If Brendan learns the audition song, he will be selected for the chorus. If Brendan stays after school to practice, he will learn the audition song. Brendan stays after school to practice.

Lesson 2-4  Algebra  You are given that $2c^2 = 2bc + \frac{3c}{2}$ with $c \neq 0$. Show that $4b = 4c - a$ by filling in the blanks.

13. a. $2c^2 = 2bc + \frac{3c}{2}$  
   b. $4c^2 = 4bc + ac$  
   c. $4c = 4b + a$  
   d. $? = b$  
   e. $4b = 4c - a$

Lesson 2-5  Algebra  Find the value of $x$.

14. $3x - 14 = 12x + 10$
15. $2x^2 = 4x^2$
16. $5x + 5^o = 2x^o$
Lesson 3-1  Find \( m \angle 1 \) and then \( m \angle 2 \). State the theorems or postulates that justify your answers.

1. \( \angle 1 \) and \( \angle 2 \)
2. \( \angle 2 \) and \( \angle 1 \)
3. \( \angle 2 \) and \( \angle 1 \)
4. \( \angle 2 \) and \( \angle 1 \)

Lesson 3-2  Refer to the diagram at the right. Use the given information to determine which lines, if any, must be parallel. If any lines are parallel, use a theorem or postulate to tell why.

5. \( \angle 9 \approx \angle 14 \)
6. \( \angle 1 \approx \angle 9 \)
7. \( \angle 2 \) is supplementary to \( \angle 3 \).
8. \( \angle 7 \approx \angle 14 \)
9. \( m \angle 6 = 60 \), \( m \angle 13 = 120 \)
10. \( \angle 4 \approx \angle 13 \)
11. \( \angle 3 \) is supplementary to \( \angle 10 \).
12. \( \angle 10 \approx \angle 15 \)

Lesson 3-3  Use a protractor and a centimeter ruler to measure the angles and the sides of each triangle. Classify each triangle by its angles and sides.

13. 
14. 
15. 
16. 

Lessons 3-3 and 3-4  Algebra  Find the value of each variable.

17. 
18. 
19. 
20. 

Lessons 3-5  Write an equation in point-slope form of the line that contains the given points.

21. A \((4, 2)\), B \((6, −3)\)
22. C \((-1, −1)\), D \((1, 1)\)
23. F \((3, −5)\), G \((-5, 3)\)
24. K \((5, 0)\), L \((-5, 2)\)

Lessons 3-5 and 3-6  Algebra  Graph each pair of lines and state whether they are parallel, perpendicular, or neither. Explain.

25. \( y = 4x − 8 \)
26. \( 13y − x = 7 \)
27. \( y = \frac{4}{3}x + 2 \)
28. \( \frac{3}{5}y = −x + \frac{3}{2} \)

29. Construct a square with side length \( 2a \).
30. Construct a quadrilateral with one pair of parallel sides each of length \( 2b \).
31. Construct a rectangle with sides \( b \) and \( a \).
Lesson 4-1 \( \triangle SAT \cong \triangle G R E \). Complete each congruence statement.

1. \( \angle S \cong ? \)  
2. \( \angle GR \cong ? \)  
3. \( \angle E \cong ? \)  
4. \( \overline{AT} \cong ? \)  
5. \( \triangle E R G \cong ? \)  
6. \( \overline{EG} \cong ? \)  
7. \( \triangle R E G \cong ? \)  
8. \( \angle R \cong ? \)

State whether the figures are congruent. Justify each answer.

9. \( \triangle A B F ; \triangle E D C \)  
10. \( \triangle T U V ; \triangle U V W \)  
11. \( \square X Y Z V ; \square U T Z V \)  
12. \( \triangle A B D ; \triangle E D B \)

Lessons 4-2 and 4-3 Where possible, explain how you would use SSS, SAS, ASA, or AAS to prove the triangles congruent. If not possible, write not possible.

13.  
14.  
15.  
16.

Lesson 4-4 Explain how you would use SSS, SAS, ASA, or HL with CPCTC to prove each statement.

17. \( \angle M L N \cong \angle O N L \)  
18. \( \overline{T O} \cong \overline{E S} \)  
19. \( \overline{M B} \cong \overline{R I} \)

Lessons 4-5 and 4-6 Algebra Find the value of each variable.

20.  
21.  
22.  
23.

Lesson 4-7 Name a pair of overlapping congruent triangles in each diagram. State whether the triangles are congruent by SSS, SAS, ASA, AAS, or HL.

24.  
25.  
26.
Lesson 5-1 Algebra Find the value of \( x \).

1. \( 7x - 1 = 48 \)
2. \( 48 = 3x \)
3. \( 14 = x \)
4. \( 5 = x \)

Lessons 5-1 and 5-2 Algebra Use the figure at the right.

5. Find the value of \( x \).
6. Find the length of \( \overline{AD} \).
7. Find the value of \( y \).
8. Find the length of \( \overline{EG} \).

Lesson 5-3 Find the center of the circle that you can circumscribe about \( \triangle ABC \).

9. \( A(2, 8) \)
10. \( A(-3, 6) \)
11. \( A(4, 3) \)
12. \( A(-10, -2) \)

B(0, 8)
B(-3, -2)
B(-4, -3)
B(-2, -2)

C(2, 2)
C(7, 6)
C(4, -3)
C(-2, -10)

Is \( \overline{AB} \) an angle bisector, altitude, median, or perpendicular bisector?

13.
14.
15.
16.

Lesson 5-4 Write (a) the inverse and (b) the contrapositive of each statement.

17. If two angles are vertical, then they are congruent.
18. If figures are similar, then their side lengths are proportional.
19. If a car is blue, then it has no doors.

Write the first step of an indirect proof of each statement.

20. \( \triangle ABC \) is a right triangle.
22. Lines \( \ell \) and \( m \) are not parallel.
23. \( \square XYZV \) is a square.

Lesson 5-5 List the sides of each triangle in order from shortest to longest.

24.
25. \( P \) 53°
26. \( Q \) 46°
27.

Can a triangle have sides with the given lengths? Explain.

28. 2 in., 3 in., 5 in.
29. 9 cm, 11 cm, 15 cm
30. 8 ft, 9 ft, 18 ft
Lesson 8-1 Algebra  Solve each proportion.
1. \( \frac{2}{3} = \frac{x}{15} \)
2. \( \frac{4}{9} = \frac{16}{x} \)
3. \( \frac{x}{4} = \frac{6}{12} \)
4. \( \frac{2}{x} = \frac{3}{5} \)
5. \( \frac{3}{4} = \frac{x}{6} \)
6. \( \frac{2}{7} = \frac{9}{x} \)

Lesson 8-2 Algebra  The polygons are similar. Find the values of the variables.
7. \( 3y - 2 = 100 \)
8. \( 4.5 \)
9. \( 3x = 2 \)
10. \( 7x + 4 = 3.5 \)

Lesson 8-3  Can you prove that the triangles are similar? If so, write a similarity statement and tell whether you would use \( \text{AA} \sim \), \( \text{SA} \sim \), or \( \text{SSS} \sim \).
11. \( C = 21 \)
12. \( x = 14 \)
13. \( F = 24 \)

Lessons 8-4 and 8-5 Algebra  Find the value of each variable. If an answer is not a whole number, leave it in simplest radical form.
14. \( x \neq 5; y \neq 30 \)
15. \( x \neq 13; y = 10 \)
16. \( x \neq 144; y = 25 \)
17. \( x \neq 8; y \neq 10 \)

Lesson 8-6  Find the ratio of the perimeters and the ratio of the areas of the blue figure to the red figure.
22. \( 5 \text{ cm} \)
23. \( 6 \text{ ft} \)
24. \( 5 \text{ in.} \)