EXAM 3 REVIEW

Math 200 – Spring 2007

The third exam will be on Thursday, March 1.

The exam will cover Geometry Units 1-4 and Textbook Chapter 3.

All homework from Geometry Units 1-4 and Textbook Chapter 3 is due at the exam (late assignments are NOT accepted).

You may use your calculator on this exam.

You may NOT use your notes, homework, book, or neighbors on this exam. You do get a $3^1/_2$ X 5 "cheat-sheet" for this exam.

Below is a review for this exam. Anything on the review could possibly be on the exam. The exam will be shorter than the review.

Review for Units 1 - 4

In exercises 1-5, use figure 1 to answer the questions true or false.

1. D is on $\overleftrightarrow{AB}$.

2. C is on $\overrightarrow{AB}$.

3. B is on $\overline{CD}$.

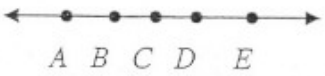
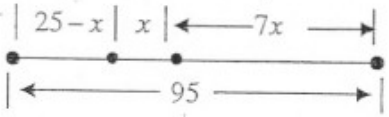


Figure 1

4. B is an endpoint of $\overrightarrow{BC}$.

5. A and E are endpoint of $\overleftrightarrow{AE}$.

6. Find the value of x in the figure to the below.



7. Find the complement of an angle measuring $27°$.

8. Find the supplement of an angle measuring $37°$.

In exercises 9 – 10 use figure 2 where a and b are intersecting lines.

9. If $m\angle 1 = 42°$, find the measures of the remaining angles.

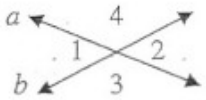
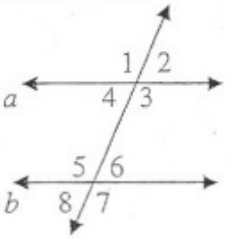


Figure 2

10. In figure 2 name one obtuse angle.

11. If angle A and angle B (not shown) are complementary and $m\angle A = 4x$ and $m\angle B = 2x - 30$, find the value of x.

In exercises 12 – 16 use the figure at the right where t is a transversal and $a \parallel b$.



12. Name the alternate interior angle congruent to angle 3.

13. Name the corresponding angle congruent to angle 7.

14. If $m\angle 1 = 130°$, find the measures of the remaining angles.

15. If $m\angle 1 = (x+16)°$ and $m\angle 5 = 2(x-2)°$, find the value of x and the measure of angle 8.

16. If $m\angle 4 = x - 10$ and $m\angle 5 = 2x + 13$, find the value of x and the measure of angle 3.

In exercises 16-18, answer the questions true or false.

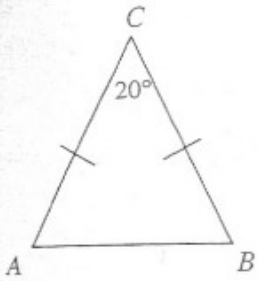
17. A scalene triangle may also be an obtuse triangle.

18. An acute triangle has only one acute angle.

19. All isosceles triangles have two congruent sides.

In exercises 20-22 find the measures of all angles.

20.



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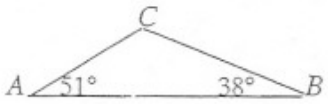

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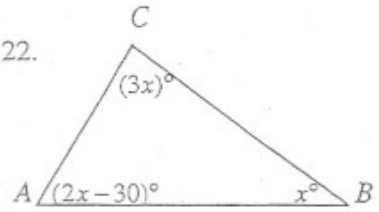
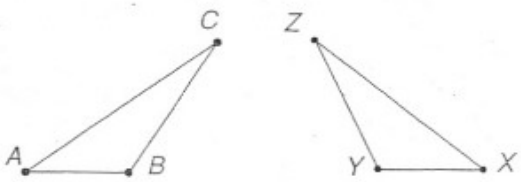
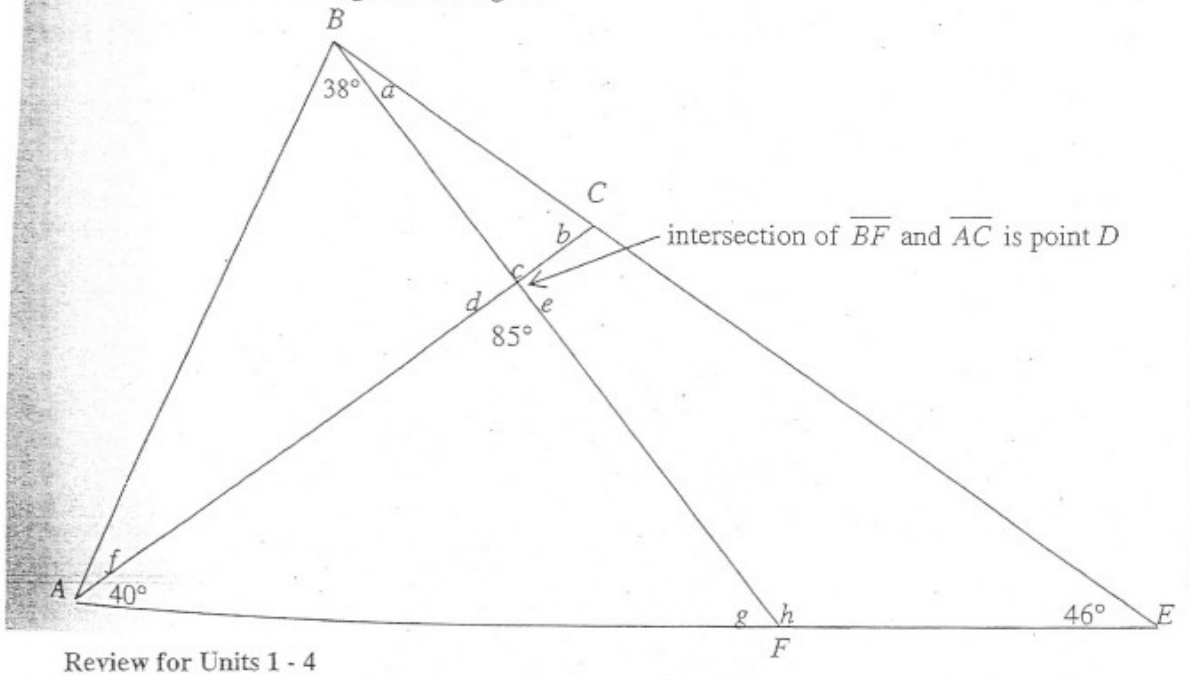


23. If $\Delta ABC \cong \Delta XYZ$ name the corresponding congruent parts using correct notation.



24. Find the measures of angles a through h.



Review for Units 1 - 4

1. true
2. true
3. false
4. true
5. false
6. $25-x+x+7x=95;\ x=10$
7. $63°$
8. $143°$
9. $m\angle 2=42°;\ m\angle 3=138°;\ m\angle 4=138°$
10. $\angle 3$ or $\angle 4$
11. $x=20$
12. $\angle 5$
13. $\angle 3$
14. $m\angle 1=m\angle 3=m\angle 5=m\angle 7=130°;\ m\angle 2=m\angle 4=m\angle 6=m\angle 8=50°$
15. $x=20;\ m\angle 8=144°$
16. $x=59;\ m\angle 3=131°$
17. true
18. false
19. true
20. $m\angle A=80°;\ m\angle B=80°$
21. $m\angle C=91°$
22. $3x+2x-30+x=180;\ x=35$ so $m\angle A=40°, m\angle B=35°, m\angle C=105°$
23. $\angle A\cong\angle X;\ \angle B\cong\angle Y;\ \angle C\cong\angle Z;\ \overline{AB}\cong\overline{XY};\ \overline{AC}\cong\overline{XZ};\ \overline{BC}\cong\overline{YZ}$
24. $a=9°;\ b=86°;\ c=85°;\ d=95°;\ e=95°;\ f=47°;\ g=55°;\ h=125°$

CHAPTER 3 REVIEW EXERCISES

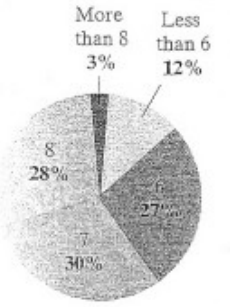
1. You invested $10,000 in two stocks paying 8% and 10% annual interest, respectively. At the end of the year, the total interest from these investments was $940. How much was invested at each rate?
2. You invested money in two stocks that paid 10% and 12% annual interest. The amount invested at 12% exceeded the amount invested at 10% by $6000. At the end of the year, the total interest from these investments was $2480. How much was invested at each rate?
3. A chemist needs to mix a 75% saltwater solution with a 50% saltwater solution to obtain 10 gallons of a 60% saltwater solution. How many gallons of each of the solutions must be used?
4. Is it possible to mix an alloy that is 30% copper with one that is 50% copper to obtain 50 ounces of an alloy that is 70% copper? If it is possible, how many ounces of each kind of alloy must be used?
5. A university is merging two departments into one. At the north campus, 5% of the students in the department are men. At the south campus, 80% of the students in the department are men. After the merger, 50% of the 150 students in the department are men. How many students were in the department at the north and south campuses before the merger?
6. Two trains start from the same place at the same time. They travel in opposite directions. One averages 60 miles per hour and the other averages 80 miles per hour. After how long will they be 420 miles apart?
7. Two buses leave a station at the same time, traveling in opposite directions. The rate of the faster bus exceeds that of the slower bus by 10 miles per hour. After 3 hours, they are 210 miles apart. What are the rates of the buses?
8. A wallet contains $5 bills and $10 bills. There are 15 bills in the wallet with a total value of $120. Determine the number of $5 bills and the number of $10 bills in the wallet.

In Exercises 9–11, determine if there is **exactly enough information** *or* **not enough information** *to solve each problem. It is not necessary actually to solve any of these problems.*

9. You invested $10,000 in stocks paying 6% annual interest and the remainder of your savings in bonds paying 8% annual interest. At the end of the year, the total interest from these investments was $730. How much was invested at 8%?
10. A chemist needs a 15% benzene solution. The stockroom has only 12% and 20% solutions. How much of each of these solutions must be used?
11. Downtown Books is having a sale on hardcover and softcover books. All hardcover books are priced at $5 per book and all softcover books at $2 per book. The store sold 30 more softcover than hardcover books and had total sales of $570. How many books of each type did the store sell?
12. In a class, there are 15 men and 10 women. Find the ratio of the number of women to the number of students in the class. First express the ratio as a fraction reduced to lowest terms. Then rewrite the ratio using a second method.

The circle graph indicates the average number of hours Americans sleep each night. Use the graph to find each of the ratios in Exercises 13–14. First express the ratio as a fraction reduced to lowest terms. Then rewrite the ratio using a second method.

Average Number of Hours Americans Sleep Each Night



Source: American Medical Association

13. The percentage of Americans who sleep 7 hours per night to the percentage of Americans who sleep 8 hours per night.
14. The percentage of Americans who sleep less than 6 hours per night to the percentage of Americans who sleep more than 8 hours per night

Solve each proportion in Exercises 15–18.

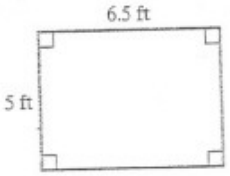
15. $\frac{3}{x} = \frac{15}{25}$
16. $\frac{-7}{5} = \frac{91}{x}$
17. $\frac{x+2}{3} = \frac{4}{5}$
18. $\frac{5}{x+7} = \frac{3}{x+3}$

Use a proportion to solve each problem in Exercises 19–21.

19. If a school board determines that there should be 3 teachers for every 50 students, how many teachers are needed for an enrollment of 5400 students?
20. To determine the number of trout in a lake, a conservationist catches 112 trout, tags them, and returns them to the lake. Later, 82 trout are caught, and 32 of them are found to be tagged. How many trout are in the lake?
21. The owners of Skaters Now determine that the monthly sales of their skates is proportional to their advertising budget. When $60,000 is spent on advertising, the company sells 12,000 skates in a month. What will be the monthly sales if they spend $96,000 on advertising?

Use a formula for area to find the area of each figure in Exercises 22–24.

22.



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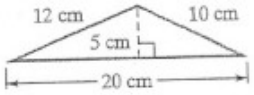

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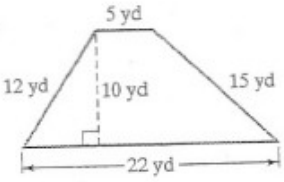


25. Find the circumference and the area of a circle with a diameter of 20 meters. Round answers to the nearest whole number.

26. A sailboat has a triangular sail with an area of 42 square feet and a base that measures 14 feet. Find the height of the sail.

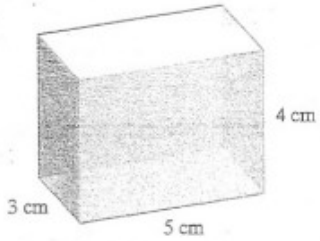
27. A rectangular kitchen floor measures 12 feet by 15 feet. A stove on the floor has a rectangular base measuring 3 feet by 4 feet, and a refrigerator covers a rectangular area of the floor measuring 3 feet by 4 feet. How many square feet of tile will be needed to cover the kitchen floor not counting the area used by the stove and the refrigerator?

28. A yard that is to be covered with mats of grass is shaped like a trapezoid. The bases are 80 feet and 100 feet, and the height is 60 feet. What is the cost of putting the grass mats on the yard if the landscaper charges $0.35 per square foot?

29. Which one of the following is a better buy: a medium pizza with a 14-inch diameter for $6.00 or two small pizzas, each with an 8-inch diameter, for $6.00?

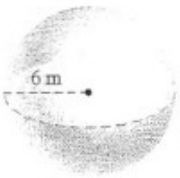
Use a formula for volume to find the volume of each figure in Exercises 30–32. Where applicable, express answers in terms of π. Then round to the nearest whole number.

30.



31.

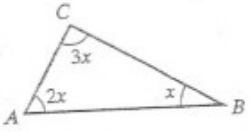
32.



33. A train is being loaded with freight containers. Each box is 8 meters long, 4 meters wide, and 3 meters high. If there are 50 freight containers, how much space is needed?

34. A cylindrical fish tank has a diameter of 6 feet and a height of 3 feet. How many tropical fish can be put in the tank if each fish needs 5 cubic feet of water?

35. Find the measure of each angle of the triangle shown in the figure.



36. In a triangle, the measure of the first angle is 15° more than twice the measure of the second angle. The measure of the third angle exceeds that of the second angle by 25°. What is the measure of each angle?

37. Find the measure of the complement of a 57° angle.

38. Find the measure of the supplement of a 75° angle.

39. How many degrees are there in an angle that measures 25° more than the measure of its complement?

40. The measure of the supplement of an angle is 45° less than four times the measure of the angle. Find the measure of the angle and its supplement.

Review Exercises

1. $3000 at 8% and $7000 at 10% 2. $8000 at 10% and $14,000 at 12% 3. 4 gal of 75% and 6 gal of 50% 4. No, it is not possible.
5. North had 60 students and south had 90 students. 6. 3 hr 7. 30 mph and 40 mph 8. $5 bills: 6; $10 bills: 9 9. exactly enough information
10. not enough information 11. exactly enough information 12. $\frac{2}{5}$; 2:5, or 2 to 5 13. $\frac{15}{14}$; 15:14, or 15 to 14 14. $\frac{4}{1}$; 4:1, or 4 to 1 15. 5
16. -65 17. $\frac{2}{5}$ 18. 3 19. 324 teachers 20. 287 trout 21. 19,200 skates 22. 32.5 ft^2 23. 50 cm^2 24. 135 yd^2
25. 20π m $\approx$ 63 m; 100π m^2 $\approx$ 314 m^2 26. 6 ft 27. 156 ft^2 28. $1890 29. medium pizza 30. 60 cm^3 31. 128π yd^3 $\approx$ 402 yd^3
32. 288π m^3 $\approx$ 905 m^3 33. 4800 m^3 34. 16 fish 35. $x = 30, 3x = 90, 2x = 60$; 30°, 60°, 90° 36. 85°, 35°, 60° 37. 33° 38. 105°
39. 57.5° 40. 45° and 135°