

**To the Student:**

After your registration is complete and your proctor has been approved, you may take the Credit by Examination for Math 8B.

WHAT TO BRING

- several No. 2 pencils
- eraser
- notebook paper

ABOUT THE EXAM

The exam covers the Texas Essential Knowledge and Skills (TEKS) as directed by the Texas Education Agency (TEA). You will be tested over proportions, Pythagorean Theorem, congruency, surface area, volume, and problem strategies.

You may use a variety of materials to prepare for the CBE, but we strongly suggest you purchase the textbook that Texas Tech University Outreach & Distance Education uses for its Math 8B course. If you choose to purchase the textbook, you should study the following:

- Chapter 1 (sections 1-1, 1-7, 1-10)
- Chapter 2 (sections 2-2, 2-6)
- Chapter 5 (section 5-9)
- Chapter 6 (section 6-6)
- Chapter 7 (section 7-1)
- Chapter 8 (section 8-2)
- Chapter 9 (sections 9-1, 9-2, 9-4, 9-5, 9-6)
- Chapter 10 (sections 10-3, 10-3B, 10-4, 10-9)
- Chapter 11 (sections 11-2, 11-5, 11-6, 11-9)
- Chapter 12 (sections 12-4, 12-5, 12-7, 12-8)
- Chapter 13 (section 13-4)

The textbook is:

William Leschensky, Carol Malloy, Jack Price, Jim Rath, Yuria Alban, and Cindy Boyd. (1999). *Pre-Algebra: An Integrated Transition to Algebra & Geometry*, Texas ed. Westerville, OH: Glencoe/Mcgraw-Hill.

You will have three hours to complete the CBE, and you will need to bring notebook paper, pencils, and erasers. ***You will not be allowed to use a calculator.***

A sample exam and an answer key are included with this letter. The sample exam will give you a model of the types of questions that will be asked on your examination. It is *not* a duplicate of the actual exam. It is provided to illustrate the format of the CBE, not to serve as a comprehensive review sheet. If you study only the problems on the sample exam, you will ***not*** be adequately prepared for the CBE. You must study all of the objectives and be able to do the following:

- compare and contrast proportional and non-proportional relationships;
- estimate and find solutions to problems involving rates;
- use pictures to demonstrate Pythagorean Theorem;
- locate and plot points on a coordinate plane;
- graph dilations, reflections, and translations on a coordinate plane;
- generate similar shapes using dilations, including enlargements and reductions;
- find surface area of prisms and cylinders;
- find volume of prisms, cylinders, pyramids, and cones;
- estimate answers and solve problems involving surface area and volume;
- use the Pythagorean Theorem to solve real-life problems;
- use proportional relationships in similar shapes to find missing measurements;
- find the probabilities of independent and dependent events;
- use probabilities to make predictions and decisions;
- select an appropriate measure of central tendency to describe a set of data;
- draw conclusions and make predictions by analyzing trends in scatterplots;
- construct circle graphs, bar graphs, and histograms;
- use samples to determine validity of an inference made from a set of data;
- recognize when statistics are misleading.

For more information about CBE policies, visit <http://www.ode.ttu.edu/takeacbe/> or see your course Policies & Forms Guide.

Good luck on your examination!

Formula Chart

Perimeter

Square $P = 4s$

Rectangle $P = 2l + 2w$

Circumference

Circle $C = 2\pi r$ or $C = \pi d$

Area

Square $A = s^2$

Rectangle $A = lw$

Triangle $A = \frac{1}{2} Bh$

Circle $A = \pi r^2$

Surface Area

Cube $S = 6s^2$

Cylinder $S = 2\pi rh + 2\pi r^2$

Volume

Prism $V = Bh$

Cylinder $V = Bh$

Pyramid $V = \frac{1}{3} Bh$

Cone $V = \frac{1}{3} Bh$

$B =$ area of Base

Pythagorean Theorem $a^2 + b^2 = c^2$

CBE Practice Exam

Write the ratio as a fraction in simplest form.

1. 30 : 45
2. 16 losses in 40 games

Find the unit rate for each.

3. \$7.77 for 3 pounds
4. 30 yards in 15 seconds

Compare the ratios. Complete the proportion statement with = if the ratios are equal, or \neq if they are not.

5. $\frac{21}{28}$ _____ $\frac{3}{4}$

Solve for x and h .

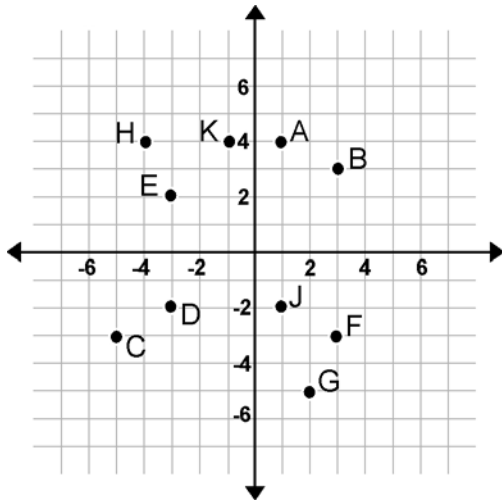
6. $\frac{17}{50} = \frac{x}{25}$

7. $\frac{0.18}{0.09} = \frac{h}{0.06}$

Write a proportion and then solve.

8. 225 bushels for 3 acres and x bushels for 9.6 acres
9. If 9 fully loaded trucks carry a total of 140,400 pounds, how many pounds can 3 trucks carry?

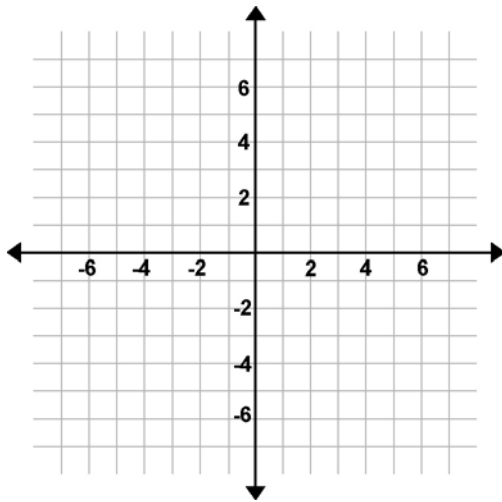
Name the ordered pairs for each point.



10. D

11. H

Plot and label each point on the graph.



12. $Q(0, -2)$

13. $R(6, 3)$

Name the quadrant where you would find the ordered pairs.

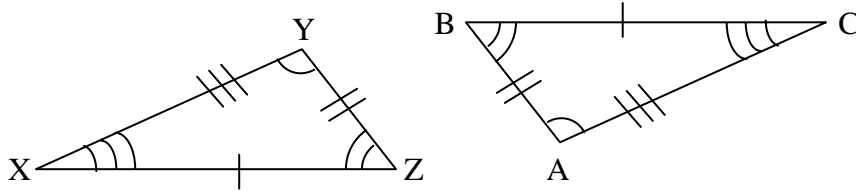
14. $(-1, 2)$

15. $(-6, -5)$

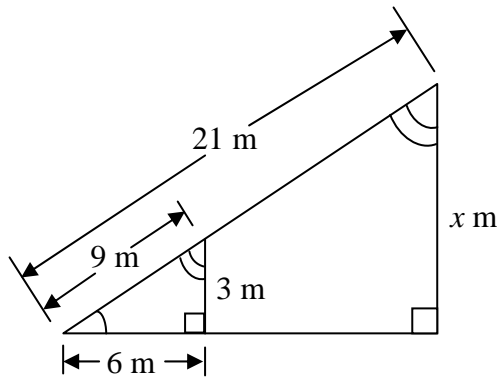
Use your geometry skills to answer questions 16-28. Be sure to round your measurements to the nearest tenth.

16. Complete the congruence statement for the pair of congruent triangles. Then, name the corresponding parts.

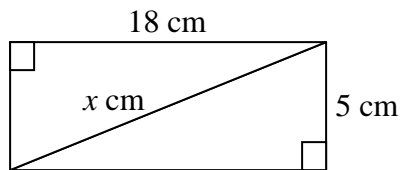
$\triangle XYZ = \underline{\hspace{2cm}}$



17. Find the missing measure x . Round your answer to the nearest tenth.

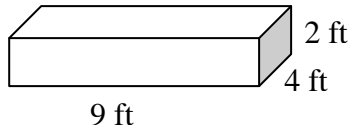


18. Solve for x . Round your answer to the nearest tenth.

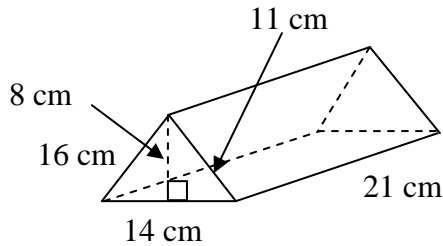


19. The measurements of three sides of a triangle are 10 mi, 20 mi, and 30 mi. Is this a right triangle?
20. The measurements of three sides of a triangle are 4 m, 8 m, and 11 m. Is this a right triangle?

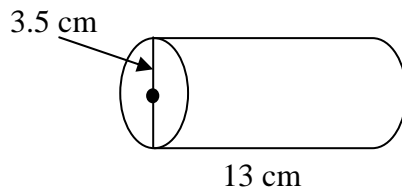
21. Find the surface area of the box. Round your answer to the nearest tenth.



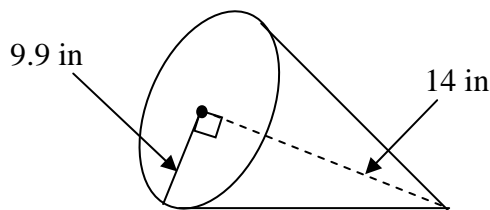
22. Find the volume of the figure in number 21. Round your answer to the nearest tenth.
23. Find the surface area of the prism. Round your answer to the nearest tenth.



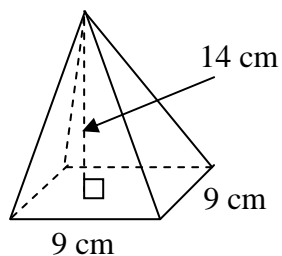
24. Find the volume of the figure in number 23. Round your answer to the nearest tenth.
25. Find the surface area of the cylinder. Use $\pi = 3.14$, and round your answer to the nearest tenth.



26. Find the volume of the figure in number 25. Use $\pi = 3.14$, and round your answer to the nearest tenth.
27. Find the volume of the cone. Use $\pi = 3.14$, and round your answer to the nearest tenth.



28. Find the volume of the pyramid. Round your answer to the nearest tenth.



Use the following data set for problems 29, 30, and 31: {73, 75, 71, 69, 72, 71, 73, 71}. Round your answers to the nearest tenth.

29. Find the mean.

30. Find the median.

31. Find the mode.

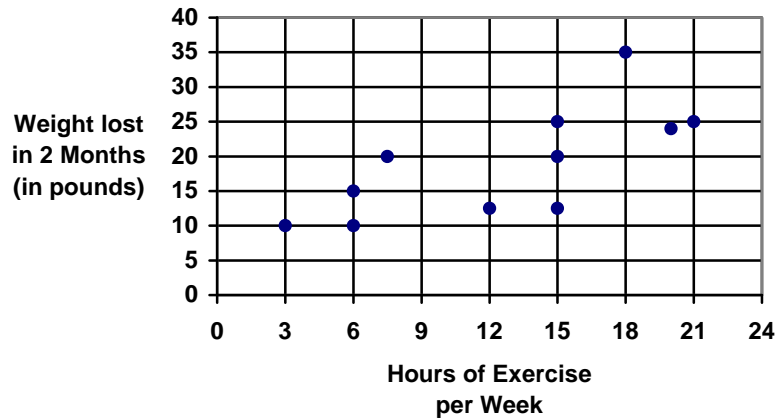
Use the following data set to answer problems 32, 33, and 34: {7.0, 6.3, 7.5, 6.4, 8.9, 5.4, 7.9, 6.8}. Round your answers to the nearest tenth.

32. Find the mean.

33. Find the median.

34. Find the mode.

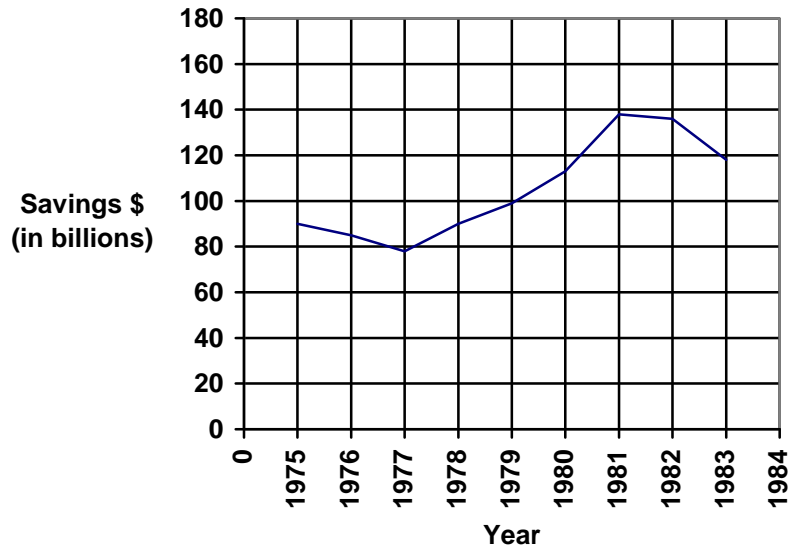
Study the scatter plot and answer the following question:



35. Is there a relationship between the hours of exercise and the amount of weight lost? Is so, is the relationship positive or negative?

Use the graph below to answer questions 36, 37, and 38:

Personal Savings by Individuals in the U.S.



36. Based on the trend from 1977 through 1981, what level of savings would you predict for 1982?
37. How does your prediction for 1982 compare with the actual level of savings for 1982?

38. Based on the trend from 1981 through 1983, what level of savings would you predict for 1984?

Assume you have 5 blue and 3 green marbles in a bag. Use this information to answer questions 39-42. Write your answer in simplest form.

39. What is the probability of drawing a blue marble?
40. What is the probability of drawing a green marble?
41. Without replacing the marble, what is the probability of picking 2 green marbles in a row?
42. Replacing the marble, what is the probability of picking a blue marble and then a green one?

The table below displays the number of birthdays each month for the first six months of the year. Use the table to answer questions 43 and 44.

Month	Frequency
Jan	5
Feb	8
March	4
April	11
May	8
June	12

43. Make a bar graph to display the information.
44. Which 2 months had the greatest number of birthdays?

Use your problem solving and graphing skills to complete the following:

45. The chart shows how the Lewis family spends their money. Make a circle graph to display the data.

Lewis Family Spending	
Housing	\$10,500
Food	\$7,500
Clothing	\$3,000
Investments	\$3,000
Miscellaneous	\$6,000

46. The Grandview High School Music department is organizing an autumn concert involving the choruses, the orchestra, and the symphonic band. The 10th grade girls' chorus has 15 minutes to fill in the concert. If each of the songs they are considering performing is about 4 minutes long, about how many songs can they plan to sing?
47. An octagon is a shape with 8 sides. If a regular octagon has a perimeter of 10 cm, what are the lengths of each side?
48. Hector's mother sent him on two errands. She gave him \$5.00. He picked up clothes at the dry cleaners and later spent half the change on a loaf of bread. He returned with \$0.97. How much did the dry cleaning cost?
49. Brad needs to set up a coding system for files in the library using two-letter combinations. He has begun this table. How many files can Brad code using the letters A, B, C, D, and E?

Letters	1	2	3	4	5
Combinations	1	4	9	16	

50. Rita had 50 stamps in her collection. She traded 6 stamps for 4 from Juanita. She traded 4 more for 5 from Mary. She traded another 5 for 3 from Denise. Finally, she traded 12 more stamps for 9 from Mike. How many stamps does Rita have now?

CBE Practice Exam Answer Key

1. $\frac{2}{3}$

2. $\frac{2}{5}$

3. \$2.59 per pound

4. 2 yards per second

5. =

6. 8.5

7. 0.12

8. $\frac{225}{3} = \frac{x}{9.6}; x = 720$

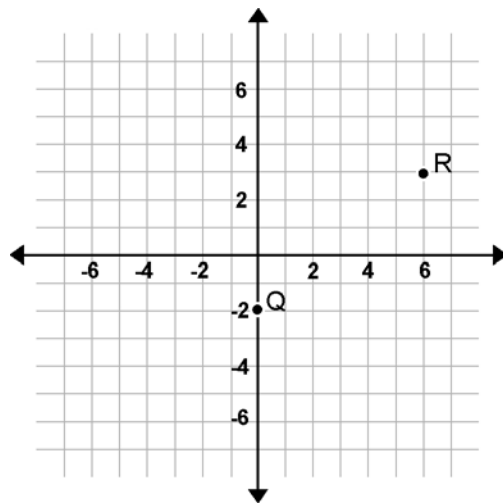
9. $9/140,400 = 3/x; 46,800$

10. (-3, -2)

11. (-4, 4)

12. See graph below.

13. See graph below.



14. II

15. III

16. $\triangle XYZ \cong \triangle CAB; \angle X \cong \angle C; \angle Y \cong \angle A; \angle Z \cong \angle B; \overline{XY} \cong \overline{CA}; \overline{YZ} \cong \overline{AB}; \overline{XZ} \cong \overline{CB}$

17. 7 m

18. 18.7 cm

19. no

20. no

21. 124 ft²

22. 72 ft³

23. 973 cm²

24. 1,176 cm³

25. 362.7 cm²

26. 500 cm³

27. 1,436.2 in³

28. 378 cm³

29. 71.9

30. 71.5

31. 71

32. 7.0

33. 6.9

34. none

35. Yes. The relationship is positive.

36. about \$150 billion

37. about \$15 billion too high

38. about \$100 billion

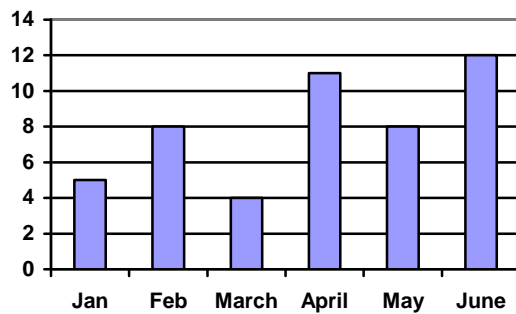
39. $\frac{5}{8}$

40. $\frac{3}{8}$

41. $\frac{3}{28}$

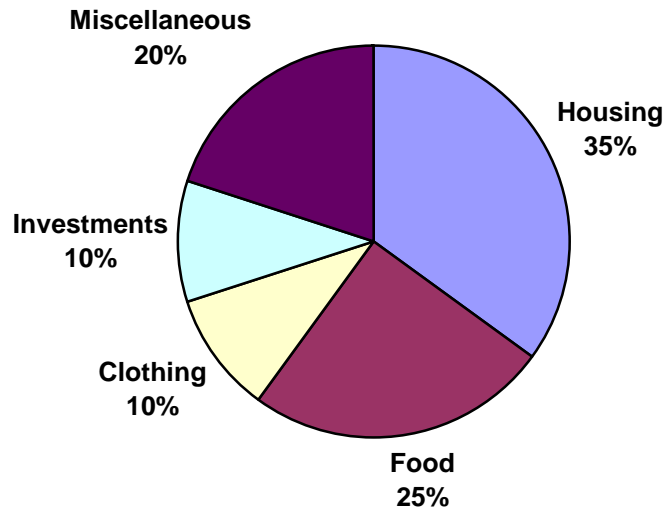
42. $\frac{15}{64}$

43.



44. April and June

45.



46. 3

47. 1.25 cm

48. \$3.06

49. 25

50. 44 stamps