Name: _____



Date: _____ Grade: _____

# *Intermediate Math Skills*

## CHAPTER 3 TEST

*Congratulations on completing this chapter!* ***Answer the following questions to test your understanding of the material. When you finish, hand in your test to your teacher for a final grade. Each answer is worth 1.7 points.***

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**Work the following problems and write your answers on the blanks. If needed, request the Mathematics Chart from your teacher to determine the conversion factors (the chart is located in the Teacher's Resource Kit). A scientific calculator will be needed for some problems. We recommend the TI 83+.**

**1.** A farmer wanted to build a barbed-wire fence around his property. After driving around the perimeter of the property, the farmer determined that the fence would need to be 3.5 miles long. Calculate how long the fence would be in feet.

_____

**2.** If the farmer in #1 built another fence .5 miles long, calculate the distance in yards.

_____

(a) 220 yds (c) 660 yds (e) 1,760 yds
(b) 440 yds (d) 880 yds (f) none of these

**3.** In the 1936 Olympics, Jesse Owens won a gold medal in the 100 m run. Calculate how many kilometers Jesse ran. _____

**4.** 4 gallon = _____ quarts

**5.** 6 pint = _____ cups

**6.** If Professor K's gas tank on his car holds 15.5 gallons of gasoline, calculate how many ounces of gasoline the gas tank will hold. _____

(a) 1,984 oz (b) 1,884 oz (c) 984 oz (d) 1,494 oz

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**7.** Professor K had 10 quarts of milk in his refrigerator. How many gallons of milk does that equal? _____

**8.** In the 2000 Olympics, Hossein Rezazadeh of Iran won a gold medal in a lift called the "snatch" by lifting 468.75 pounds. Calculate the difference between Hossein's lift and a lift of 500.00 pounds. Express your answer in kilograms.

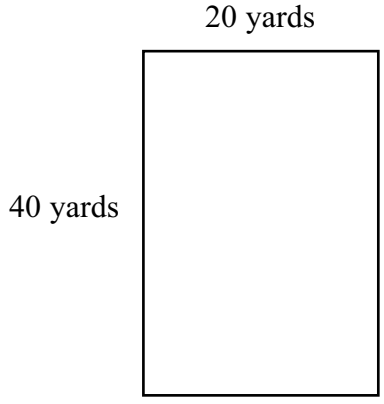
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**9.** In the 2000 Olympics, Shane Hamman lifted 195 kg in the "snatch." If Mr. Hamman lifted 180 kg in another lift, calculate how many grams Mr. Hamman lifted in the two lifts combined. _____

**10.** Professor K built a fence around his vegetable garden to keep out the rabbits. Look at the diagram of his garden and calculate how much fence Professor K had to build.

_____

(a) 60 yds (b) 80 yds (c) 100 yds (d) 120 yds




**11.** Calculate the circumference of a circle with a radius of 6. (Use a calculator to determine the answer.) _____

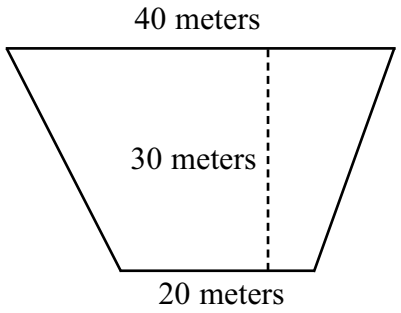
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**12.** Mrs. K wanted new carpet for her living room. Calculate the amount of carpet Professor K will have to purchase in square feet if the living room is 25 feet long and 35 feet wide.

_____

(a) 625 sq ft (b) 875 sq ft (c) 1,225 sq ft (d) 900 sq ft

**13.** Calculate the area of the trapezoid shown below. _____




**14.** Calculate the area of a triangle with a base of length 20 cm and a height of 15 cm.

_____

**15.** A child's alphabet block was in the shape of a cube. The length of the edge of the block is 1 inch. Calculate the surface area of the block. _____

**16.** The diameter of a globe in the geography classroom is 15 inches. Calculate the surface area of the globe. _____

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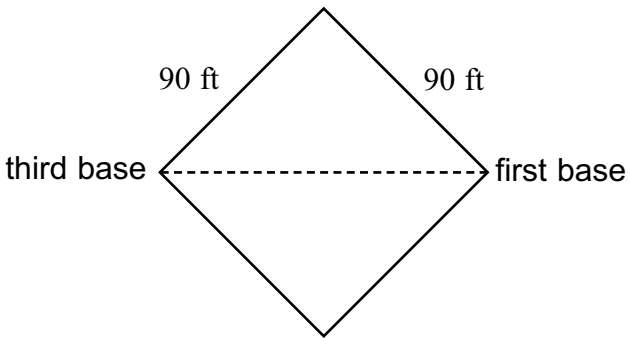
**17.** Mrs. K wanted to wrap a coffee can in paper. Mrs. K did not cover the ends of the coffee can. Calculate the lateral surface area of the coffee can if the radius of the can is 5 inches and the height is 10 inches. _____

**18.** Calculate the volume of a juice can in the shape of a cylinder if the radius of the can is 3 inches and the height is five inches. _____

**19.** At a local oil refinery, a spherical storage tank stands 50 feet tall. Calculate the volume of the tank in cubic feet. _____

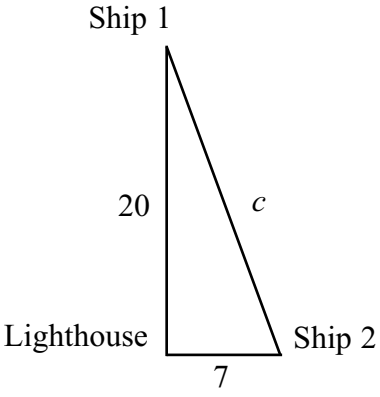
**20.** A rectangular prism is 4 inches wide, 3 inches high, and 7 inches long. Calculate the volume of the prism. _____

**21.** Using the dimensions of the baseball field below, calculate the straight-line distance between first and third base. _____

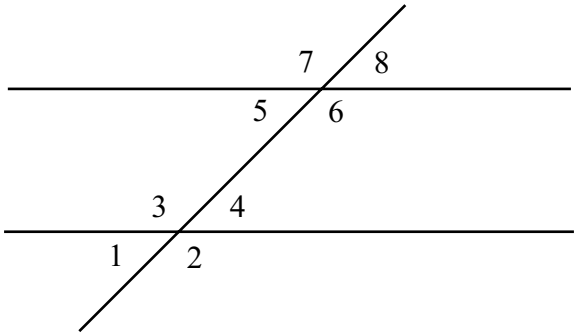



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**22.** One ship is 20 miles from a lighthouse. Another ship is 7 miles from the lighthouse. Calculate the distance between the two ships if they are positioned according to the diagram below. _____




**Refer to the figure below to answer questions 23-24.**




**Write "vertical," "supplementary," or "corresponding" on the blanks to identify the angles. Some questions have more than one answer. Be sure to write all the names for the angles that apply.**

**23.** ∠3 & ∠4 _____

**24.** ∠2 ≅ ∠6 _____

**Write "complementary," "supplementary," or "neither" on the blank, to describe the angles shown.**

**25.** m∠A = 47°; m∠B = 45°

_____

**26.** m∠A = 131° ; m∠B = 49°

_____

**27.** m∠A = 20°; m∠B = 70°

_____

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**Determine if the following ratios are proportional. Answer "Yes" or "No" on each blank.**

**28.** $\frac{3}{4}$ and $\frac{35}{100}$ _____

**29.** $\frac{1}{3}$ and $\frac{9}{27}$ _____

**Consider schools A and B. School A has a student population of 350 boys and 500 girls. School B has a student population of 200 boys and 400 girls. Calculate ratios using information from these schools in questions 30-31.**

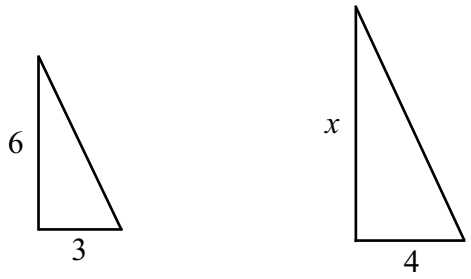
**30.** The ratio of girls to boys in School A is _____.

**31.** The ratio of boys to girls in School B is _____.

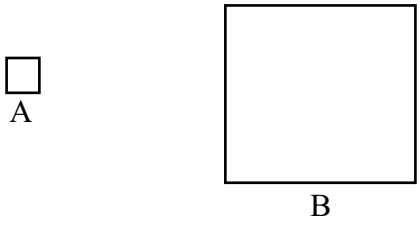
**32.** If a company's assets are $800,000 and its debts are $400,000, calculate the ratio of the company's debts to assets. _____

**Use ratios and proportions to work the following similarity problems.**

**33.** The triangles shown are similar. Calculate the value of *x*. _____

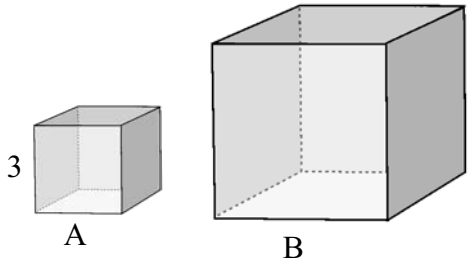



**34.** The length of the sides of square B is five times that of square A. The area of square B is _____ times the area of square A.

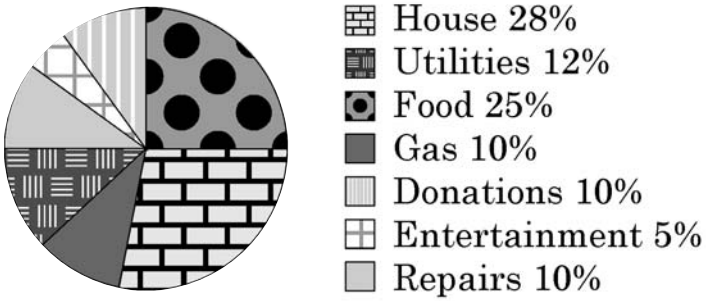



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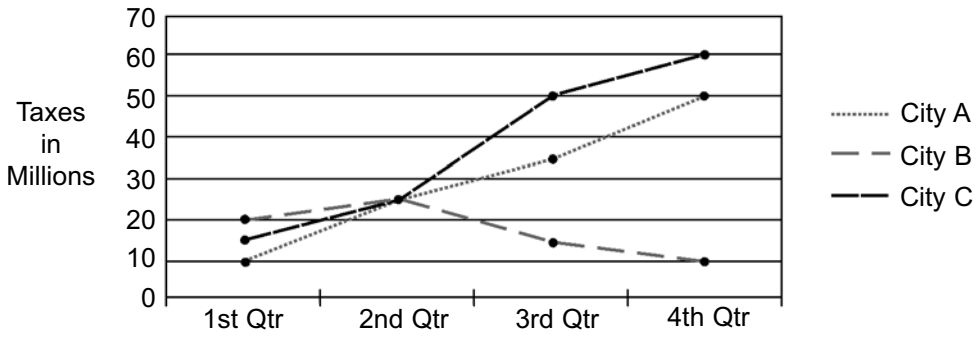
**35.** Look at the two cubes below. Determine the volume of cube B if the length of an edge is two times that of cube A.




**Answer the question related to (and immediately below) each graph for questions 36-38.**




**36.** If the family's income for a week is $1,200.00, how much would they spend on food?
$_____




**37.** Three cities' sales tax revenues are plotted on the graph above. Based on the information in this graph, if city B's tax revenues continued into the first quarter of the next year at the same rate, estimate the amount of tax revenue city B would have in the first quarter of the next year. _____

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**Calculate the probabilities.**

**38.** A number cube has six sides labeled 1, 2, 3, 4, 5, and 6. Calculate the probability of rolling a *2* or a *4*. _____

**39.** The number cube in question #38 is rolled three times. Calculate P(2, 2, 2).

_____

(a) $1/6$ (b) $1/8$ (c) $1/16$ (d) $1/64$ (e) $1/128$ (f) $1/216$

**40.** An ice chest contains 5 bottles of orange juice, 5 bottles of grape juice and 5 bottles of apple juice. Calculate the probability that the first bottle of juice pulled out randomly will be orange juice. _____

**41.** Calculate the probability that the second bottle of juice to be pulled from the ice chest in #40 is the bottle of apple juice. (The first bottle was not returned to the ice chest.)

_____

**Work the following problems. Place your answers on the blanks.**

**42.** The value of $\sqrt{31}$ would be between the numbers 5 and _____ on a number line.

**43.** Estimate the product of 495 and 32. _____

**44.** A company borrowed $195,000.00 at an interest rate of 9%. Which of the following is the best estimate for the amount of interest the company will owe at the end of one year?

_____

(a) $20,000.00 (b) $10,000.00 (c) $16,000.00 (d) not here

**45.** A company borrowed $400,000 at 10% interest for a term of 2 years. Calculate the simple interest the company would owe on the loan at the end of the term. _____

**46.** A $20,000.00 loan at a bank is paid off in 6 months. The simple interest rate is 10%. Calculate the interest owed at the end of six months. _____

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**47.** How many squares would be in the second layer of squares placed around the initial square below? _____

(a) 4 (b) 6 (c) 8 (d) 10 (e) 12 (f) 14



**48.** Determine the formula for the *n*th term of this sequence of numbers: 2, 4, 6, 8, 10, …

_____

(a) $n$ (b) $n + 2$ (c) $2n$ (d) $2n - 1$ (e) $2^n$

**Choose the best meaning for each Life Principle and write the letter of the response on the blank.**

**49.** *"Pattern your life after that which is good."* _____

(a) Patterns are always good in life.
(b) Your life is a pattern for others.
(c) You should find good things and follow them in your life.
(d) Most people have good patterns.

**50.** *"Alter your attitude and you can alter your life."* _____

(a) Attitude altering can be life threatening.
(b) Changing your attitude can be life changing.
(c) An alter attitude is like an alter ego.
(d) Attitudes have nothing to do with your life style.

**51.** *"What we are we repeatedly do. Excellence then, is not an act, but a habit."* _____

(a) To obtain excellence, we must practice.
(b) Either you are excellent or you are not excellent.
(c) You can act excellent when you are not excellent.
(d) Excellence is rated too highly.

**52.** *"You cannot escape the responsibility of tomorrow by evading it today."* _____

(a) Tomorrow may never come.
(b) We must face our responsibilities every day.
(c) We need to learn how to better evade responsibilities.
(d) Escaping responsibilities and evading responsibilities are the same thing.

**53.** *"Regarding the shape of your life, your choices are part of the equation."* _____

(a) You already know all the answers.
(b) Life is not a question, but an answer.
(c) Questions and answers are important.
(d) Your choices influence how your life takes shape.

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