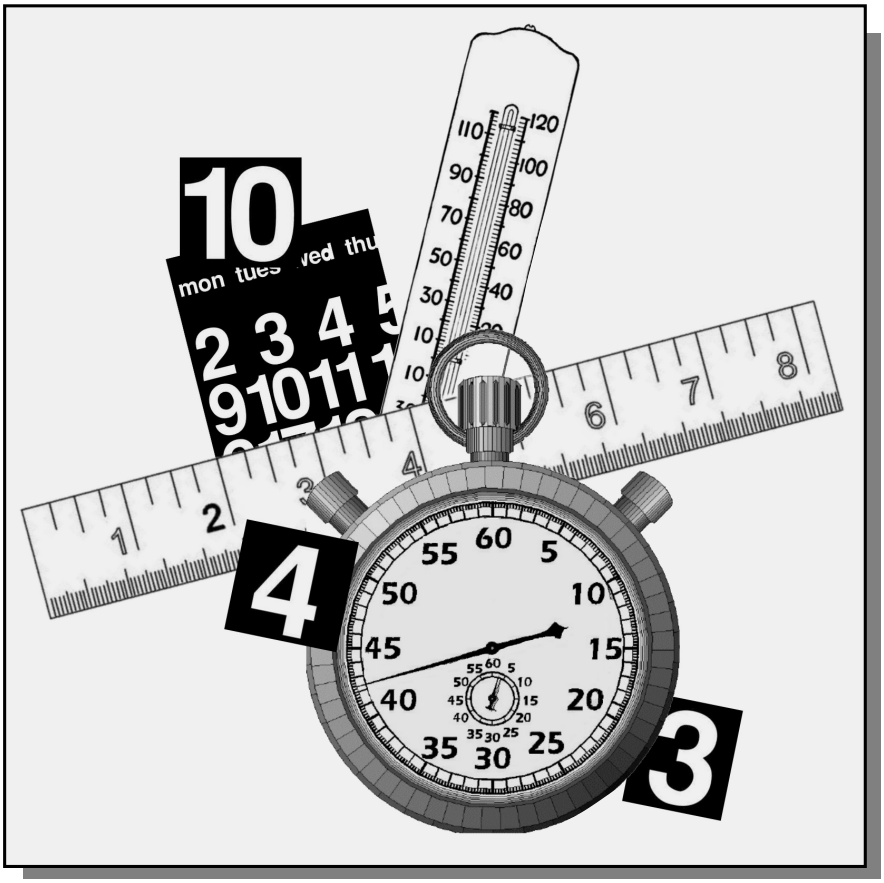
Basic Math Skills

Activities



Chapter 5

BMS: 76039 Revision: 03-7-05-1

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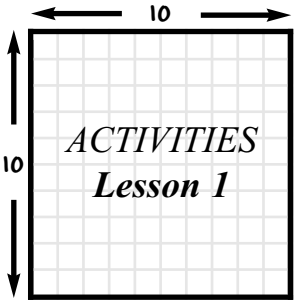
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Fractions

Fractional Metrics



You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The _____ is slowly working its way into United States ***commerce***.

2. The importance of the Metric System is evident in _____.

3. Merchants and scientists worldwide use the Metric System because calculations are _____ in the Metric System than the English System.

Refer to Example Set 1 to answer questions 4-9.

4. Roberto was from _____.

5. Each glass could hold _____ liter.

6. Roberto calculated that he needed a total of _____ liters of juice.

7. Roberto needed to purchase _____ bottles of juice.

8. In the example, a total of _____ units were divided out.

9. Families today use the metric system to _____ and record quantities of liquid, the size of objects, and the weight and height of children.

Refer to Example Set 2 to answer questions 10-17.

10. Rafael's walking staff was _____ as long as Robert's walking staff was tall.

11. Roberto's staff was _____ cm tall.

12. 96.52 cm × $\frac{1}{2}$ = _____

13. Rafael's staff is _____ long.

14. The basic unit of weight in the Metric System is the _____.

15. A kilogram is _____ grams.

16. The largest unit of weight in the Metric System is the _____.

17. One metric ton is equal to _____ kg.

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Refer to Example Set 3 to answer questions 18-21.

18. The capacity of the Red Cross truck is _____ metric tons.

19. The truck was at _____ capacity.

20. $18.2 \times {}^{3}/_{4} =$ _____ metric tons.

21. The truck was hauling _____ metric tons.

Refer to the Example Sets to work the following problems. Show your work and place your answers on the blank.

22. At a milk-drinking contest, a contestant drank $10{}^{1}/_{2}$ glasses of milk in forty-five seconds. If each glass contained one-fourth of a liter of milk, which of the following represents how many liters of milk the contestant drank? _____

(a) $2{}^{1}/_{2}$ liters (b) 2 liters (c) $2{}^{5}/_{8}$ liters (d) $2{}^{3}/_{4}$ liters

23. On their camping trip, in one hour, Roberto hiked one-third as far as Rafael. If Rafael hiked 2,100 kilometers, how far did Roberto hike? _____

(a) 6,300 (b) 800 kilometers (c) 70 kilometers (d) 700 kilometers

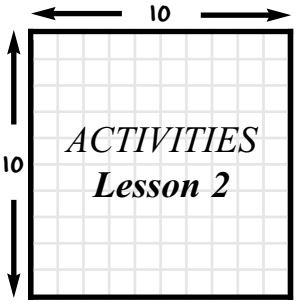
24. Another Red Cross truck had a capacity of 25 metric tons. The truck was loaded to ${}^{4}/_{5}$ capacity hauling supplies to the World Trade Center disaster. Calculate the weight of the supplies on the truck. _____

25. Write the **Life Principle**. "_____ _____."

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Converting

English to Metric System

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The world is becoming a _____ place because of faster ***modes*** of communication and transportation.

2. People can phone or _____ friends all over the world.

3. Businesses are labeling products for _____ in almost every country in the world.

4. On a given product, you may see the measurement of the item given in both _____ and English form.

5. Different _____ are needed to convert from one measurement system to another.

6. You should _____ these basic ***conversion factors***.

7. Factors multiplied to another number for the purpose of converting from one unit to another are called _____.

8. Table 2.1 shows some of the basic conversions for _____ from the English System to the Metric System of measurement.

9. What is the basic unit of length in the Metric System? _____ What is it in the English System? _____

10. The decimals are not exact and are _____ off for ease of calculation for this lesson.

11. You must remember the principles you learned in the previous lessons about _____ units.

12. one inch = _____ cm

13. one foot = _____ meter

14. _____ mile = 1.6 km

15. _____ inches = one meter

16. 1 meter = _____ yds

17. 0.9144 meters = _____ yd

18. 1 kilometer = _____ mile

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Refer to Example Set 1 to answer questions 19-23.

19. The units that divide out or cancel in a) are _____. (centimeters, inches)

20. 5 in. = _____ cm

21. In b) the English units that divide out or cancel are _____.

22. Conversion factors are placed so the units you no longer need are _____.

23. The Metric unit that is divided out or canceled in c) is _____.

Refer to Example Set 2 to answer questions 24-25.

24. In a) the unit _____ divides out (or cancels).

25. In b) the units _____ and _____ divide out or cancel.

Work the following problems. Show your work in the space provided and write your answer on the blank.

26. Which of the following represent the Metric conversion for two feet to meters? _____

(a) .6096 m (b) 6.069 m (c) 1.8288 m (d) .9144 m

27. 30 kilometers are how many miles? _____

(a) 32.7 miles (b) 48.3 miles (c) .02 miles (d) 18.6 miles

28. 5 yards = _____ meters

29. 6 meters = _____ inches

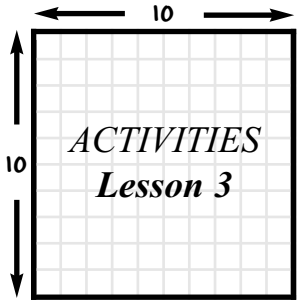
30. 2 feet = _____ cm

31. 3 cm = _____ inches

32. 400 mm = _____ inches

33. Write the **Life Principle**. "_____ _____."

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Converting

Conversions

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. It is important for everyone to be able to use _____.

2. In the United States, products from other _____ fill the store shelves.

3. Possibly the most widely used measurement for products is _____.

4. The _____ of volume factors will benefit you in the working of problems.

5. In Table 3.1 the decimals are not exact, but are _____ off.

6. The _____ is the basic unit of measure for volume in the Metric System.

7. From the chart in your text, fill in the missing equivalents:

English to Metric	Metric to English
1 cubic inch = _____ cubic cm	1 cubic cm = _____ cubic inch
1 gallon = _____ liters	1 cubic meter = _____ cubic feet
1 cubic foot = _____ liters	1 liter = _____ quarts
1 quart = _____ liters	1 liter = _____ gallon

Refer to Example Set 1 to answer questions 6-10.

8. 1 cubic in. = _____ cubic cm

9. In a) the unit that is divided out or canceled is _____.

10. In b) both _____ and _____ units are divided out or canceled.

11. 4.5 quarts = _____ ml

12. In c) the Metric volume unit, *liter*, is _____ or canceled.

Professor K directs your attention to Example Set 2 for the answers to questions 13-15.

13. 3.785 liters = _____ gallon(s)

14. In a) the English unit, _____ is divided out or canceled.

15. In b) cubic _____ remain after the cubic meter factor is canceled or divided out.

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Work the following problems in the space provided and write your answers on the blanks.

16. A box has a capacity of three cubic feet. What is the capacity of the box in liters? _____

(a) 56.63 liters (b) 28.32 liters (c) 9.4 liters (d) 84.95 liters

17. A very large cooking pot can hold 4000 ml. What is the volume of the cooking pot in gallons? _____

(a) 15.2 gallons (b) 1.06 gallons (c) 10.56 gallons (d) .528 gallons

18. A vial of medicine holds 2 cubic inches of medicine. Calculate the volume of the vial in cubic centimeters (cc). _____ cc

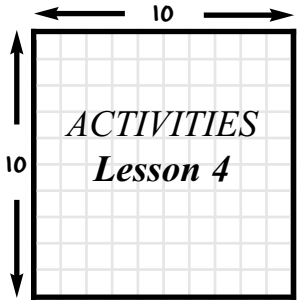
19. The average car has an oil pan with a capacity of 4.5 quarts. Calculate the capacity of the oil pan in liters (l). _____ liters (l)

20. 25 liters = _____ quarts (qts)

21. 6 gallons = _____ liters (l)

22. Write the **Life Principle**. "_____
_____."

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Converting

More Conversions

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. _____ is another measurement that is found on a large number of products.

2. Many products show both _____ and ***weight*** on the package.

3. Many products show the weight measurement of the item given in both _____ and English form.

4. You should _____ weight conversion factors.

5. What is the basic unit of weight in the Metric System? _____ In the English System? _____

6. A _____ is 1,000 ***grams***.

7. The largest unit in the Metric System is the _____.

8. One metric ton is equal to _____ kg.

9. One pound = _____ grams

10. .035 oz = _____ gram

Refer to Example Set 1 to answer questions 11-17.

11. 1 oz = _____ grams

12. The unit _____ is divided out to obtain grams.

13. One gram = _____ mg

14. The units, pounds and _____ divide out.

15. 2.5 pounds = _____ mg

16. _____ kg = 2.2 lbs

17. 5 kg = _____ pounds

Refer to Example Set 2 to answer questions 18-19.

18. The units pounds and _____ divide out in the conversions in a).

19. 50 mg = _____ oz

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Work the following problems involving weight conversions in the space provided and write your answers on the blanks.

20. A Red Cross truck carried 25 tons of relief supplies to New York City after 9-11-2001. What was the weight of the supplies in kilograms? _____

(a) 907.2 kg (b) 1,814.4 kg (c) 22,680 kg (d) 2,000 kg

21. 500 grams = _____ oz

22. 2.3 ounces = _____ grams

23. one-half of a metric ton = _____ oz (Remember, 1 lb = 16 oz)

24. 16 grams = _____ oz

25. 22 metric tons equals how many pounds? _____

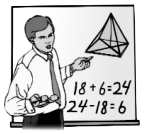
(a) 4,400 pounds (b) 48,400 pounds (c) 4,840 pounds (d) 2,200 pounds

26. 2000 g = _____ pounds

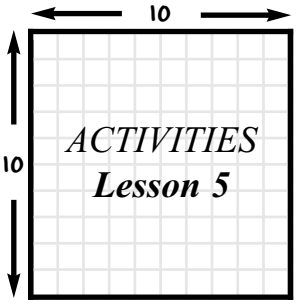
27. 10 lbs = _____ mg

28. Write the **Life Principle**. "_____ _____."

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Fundamentals



Prime

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Butcher shops and restaurants advertise _____ beef.

2. ***Prime*** means really _____ or the _____.

3. Some of the special numbers in mathematics are called _____.

4. A _____ is a positive ***integer*** that has only two positive factors, one and the original number.

5. Which of the following numbers is **NOT** a prime number? _____
7, 3, 2, 11, 6, 13, 5

6. In the story told by the grandfather, there was more than one _____ that led to the grain elevator.

7. If you can get to the _____ more than one way, the number is **NOT** a prime number.

8. A _____ is an integer greater than one that is **NOT** a prime number.

Write "C" for composite, or "P" for prime beside each of the following numbers. (9-12)

9. _____ 19 **10.** _____ 10 **11.** _____ 17 **12.** _____ 56

13. The set of numbers …-3, -2 , -1, 0, 1, 2, 3,… is known as a set of _____.

14. _____ is finding all the prime factors of a number.

15. The _____ of _____ states that every composite number has one and only one ***prime factorization***.

Refer to Example Set 1 to answer the following questions.

16. What are the prime factors of 6? _____

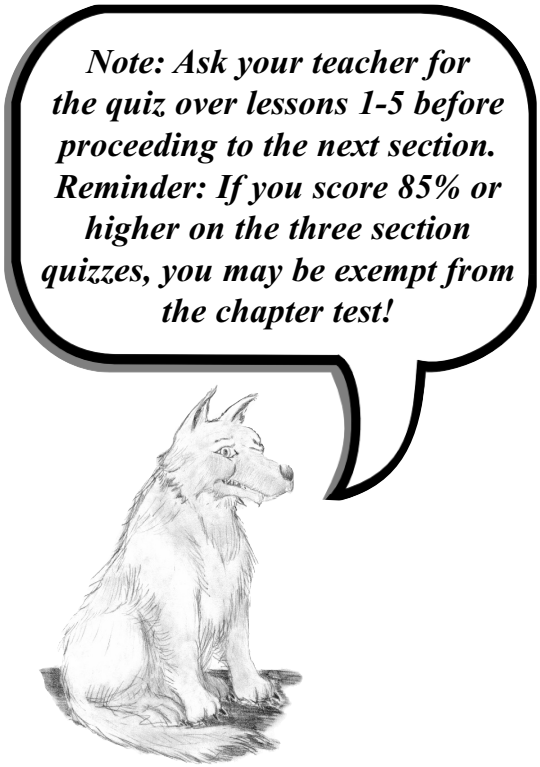
17. List all of the prime factors of 8. _____

18. What is the prime factorization of 25? _____

19. What are the prime factors of 99? _____

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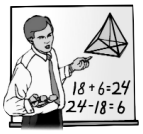
20. Write the **Life Principle**. "_____
_____."



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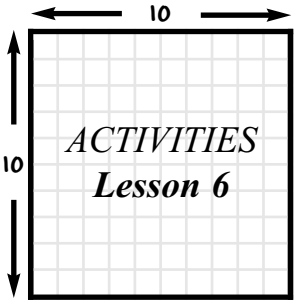
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Fundamentals

Mean, Mode, Median, Range



You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Being a math teacher, Professor K sees various types of _____ and statistics all around him.

2. Some data is used by government agencies to reveal _____ about the citizenry or to justify expenses.

3. Governmental leaders formulate and pass _____ based on monitoring information or data.

4. _____ use data to predict the weather.

5. Weathermen also utilize a variation of the _____ by counting how many temperatures were above 100° during the summer.

6. The number that occurs most often in a set of data is the _____.

7. The _____ of a set of data is also known as the average.

8. The *mean* is calculated by _____ the _____ of all the data by the number of data.

Refer to Example Set 1 to answer questions 9-14.

9. The sum of the numbers, 3, 5, 2, 13, 5, 6, 10, 12 is _____.

10. The mean is calculated by dividing 56 by _____.

11. In part b) there are _____ numbers in the list.

12. The mean of the numbers in part b) is _____.

13. $\frac{5+3+7+8+2}{5} =$ _____

14. The mean of the numbers, 3, 5, 2, 13, 5, 6, 10, 12 is _____.

Refer to Example Set 2 to answer questions 15-16.

15. Determine the ***mode(s)*** in each of the number sets in Example Set 2.
a) _____ b) _____ c) _____

16. A set of numbers with two modes is called _____.

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17. Which of the following list of numbers is ***bimodal***? _____
(a) 3, 5, 2, 4 (b) 1, 2, 3, 4, 5 (c) 9, 7, 5, 3, 1 (d) 2, 4, 6, 2, 6

Refer to Example Set 3 to answer questions 18-22.

18. The _____ is the middle of a set of numbers placed in numerical order.

19. To find the ***median*** of a list of numbers, the numbers must first be arranged in _____ order.

20. If the number of items in a list of numbers is _____, the median is the middle number.

21. If the number of items in a list of numbers is _____, the median occurs between the middle two numbers.

22. The median of the list of numbers, 5, 10, 4, 3, 15, 20 is _____.

Refer to Example Set 4 to answer questions 23-24.

23. The _____ is calculated by subtracting the smallest data from largest data.

24. The _____ is a method of calculating the spread of data from the lowest to highest number.

25. The ***range*** of the list of numbers, 40, 2, 53, 75, 1 is _____.

26. The range of the list of numbers, 4, 5, 5, 5, 6, 10 is _____.

Find the mean, mode, median and range of the following lists of numbers.

27. 4, 13, 25, 4, 9
mean _____
mode _____
median _____
range _____

28. 6, 4, 3, 3, 2, 5, 7, 10
mean _____
mode _____
median _____
range _____

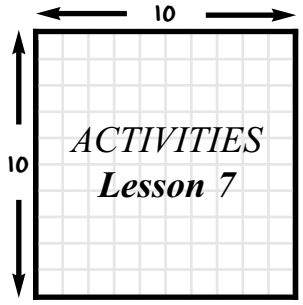
29. 24, 35, 15, 12, 13, 11, 19, 15
mean _____
mode _____
median _____
range _____

30. Write the **Life Principle**. "_____
_____."

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Scientific Notation

Scientific Notation

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. _____ is a shorthand method for writing very large numbers.

2. If something is _____, it is difficult to work with.

3. _____ of _____ are used in ***scientific notation***.

Refer to Table 7.1 to answer questions 4-8.

4. 10^{-4} = _____

5. 10^{-2} = _____

6. 10^{3} = _____

7. 10^{5} = _____

8. The number of zeros in the expanded positive ***powers of ten*** (100; 1000; 10,000; etc.) is the _____ as the value of the exponent.

9. A negative exponent causes the ten to become its _____.

Write #10 and 11 in their expanded forms as demonstrated on page 26 in the text.

10. 10^{-3} = _____

11. 10^{-1} = _____

12. A _____ is a fraction with a one in the numerator.

13. Which number below is in proper scientific notation? _____

(a) 3.893×10^{4} (b) 456 (c) 29.8×10^{12} (d) 599999.9×10^{2}

Refer to Example Set 2 for questions 14-19. Convert the following numbers to scientific notation.

14. 34981 = _____ **15.** 325 = _____

16. 9876543 = _____ **17.** 35.21 = _____

18. .0053 = _____ **19.** .0000008 = _____

Change the following numbers written in scientific notation to standard numerical form.

20. 5.87×10^{2} = _____ **21.** 8.33333×10^{4} = _____

22. 4.7245×10^{-3} = _____ **23.** 9.7×10^{-7} = _____

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24. The distance of the Earth from the Sun is approximately 92,897,000 miles. Which of the following is this distance in proper scientific notation form? _____

(a) 92.897×10^6

(b) 9.2897×10^7

(c) $92{,}897 \times 10^3$

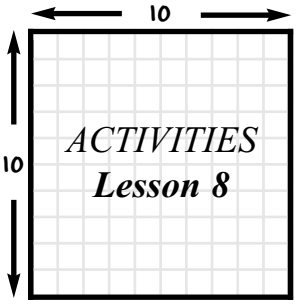
(d) none of the above

25. Write the **Life Principle**. "_____ _____."

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Name: _____

Date: _____ Grade: _____





Scientific Notation

Operating Scientific Notation

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. So that we move on to bigger and better things, often _____ must occur.

2. People often change jobs and _____.

3. _____ people look forward to change.

4. Without change, a person has no chance to produce to his greatest _____.

5. When adding numbers written in scientific notation, the powers of ten must be _____.

6. Often you must change the numbers to _____ form and then add the _____ part of the scientific number.

7. Always align _____ properly before adding.

8. The _____ of ten must be equal.

9. Once the powers of ten are _____, add the _____.

10. The final answer must be written in _____ form.

Refer to Example Set 1 to answer questions 11-19.

11. The powers of ten in part a) are _____.

12. You simply _____ the ***numeric*** portion, and leave the powers of ten the _____.

13. The answer must be converted to proper _____ form.

14. $54.3 \times 10^3 + 4.7 \times 10^3 =$ _____.

15. In part b), the powers of ten are _____.

16. One of the numbers must be _____ to make the powers of ten equal.

17. The _____ can now be added.

18. Is the answer in the proper form? (Yes or No) _____

19. The rules for subtraction of numbers in scientific notation form is the same as addition, except you must _____ instead of adding the numeric portions.

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Refer to Example Set 2 to answer questions 20-26.

20. In part a), the powers of ten are _____.

21. One of the _____ of ten must be changed.

22. You must _____ the numeric portions.

23. $5325 - 4.52 \times 10^2 =$ _____.

24. In part b), the powers of ten are _____.

25. The converted number is placed in the _____ problem.

26. 20.015×10^4 must be _____ to proper form.

Add the following numbers. Be sure to write answers in proper scientific notation form or choose the answers that most closely represent the correct answers.

27. $4 + (3.1 \times 10^3) =$ _____

28. $(32 \times 10^5) + 7.3 =$ _____

29. $(45.4 \times 10^6) + (3.56 \times 10^7) =$ _____

30. $(5.456 \times 10^3) + (3.45 \times 10^2) =$ _____

(a) 8.906×10^5 (b) 5.801×10^5 (c) 5.801×10^3 (d) 5.801×10^6

Subtract the following numbers. Be sure to write answers in proper scientific notation form or choose the answers that most closely represent the correct answers.

31. $(24.5 \times 10^2) - (12.5 \times 10^2) =$ _____

32. $(4.56 \times 10^5) - (3.24 \times 10^2) =$ _____

33. $(56.432 \times 10^4) - (24.3 \times 10^3) =$ _____

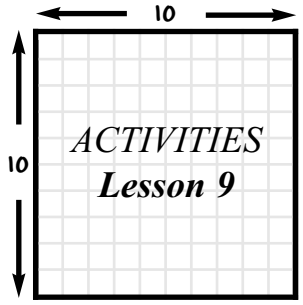
(a) 5.4002×10^5 (b) 5.6189×10^4 (c) 3.2132×10^5 (d) 54.002×10^4

34. Write the **Life Principle.** "_____
_____."

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Name: _____

Date: _____ Grade: _____





Scientific Notation

Multiply Scientific Notations

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. Some people believe that life is not _____.

2. Things are not always equal for everyone all the time, but with the right _____ and _____, you can turn negative situations into positive opportunities.

3. When multiplying numbers written in scientific notation, the powers of ten are not required to be _____ as in addition and subtraction.

4. When multiplying numbers in scientific notation form, the numeric portions are grouped together and _____, while the powers of ten (the ***exponents***) are _____.

5. The _____ is the answer to a multiplication problem.

6. Example Sets 1 and 2 demonstrate the _____ of numbers written in scientific notation.

Refer to Example Set 1 to answer questions 7-11.

7. In part a) the numeric portions are _____ and then _____.

8. The exponents of the tens are _____ together.

9. $(44.1 \times 10^4) \bullet (1.1 \times 10^3) =$ _____

10. In part b) the sum of the exponents of the tens is _____.

11. $(32.1 \times 10^8)(2 \times 10^4) =$ _____

Refer to Example Set 2 to answer questions 12-14.

12. The first step is to _____ the numeric portions and multiply.

13. You must _____ the exponents of the powers of ten.

14. The numeric equivalent must be _____ into scientific notation form.

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Multiply the following numbers. Show each step. Write answers in proper scientific notation form or choose the best answer for each question.

15. $(4 \times 10^2)(2.5) =$ _____

16. $(3.2 \times 10^5)(2.0 \times 10^7) =$ _____

17. $(65 \times 10^3)(2 \times 10^4) =$ _____

(a) 1.3×10^7 (b) 1.3×10^9 (c) 13,000,000 (d) 1.3×10^{12}

18. $(1.2 \times 10^2)(1.1 \times 10^6) =$ _____

(a) 1.32×10^{12} (b) 1.32×10^4 (c) 132,000,000 (d) 1.32×10^8

19. $(45 \times 10^5) \bullet (9 \times 10^4) =$ _____

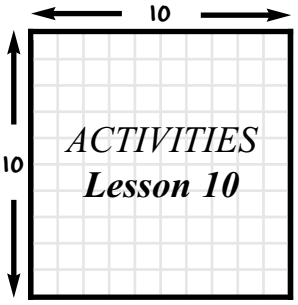
(a) 5.4×10^9 (b) 4.05×10^{20} (c) 4.05×10^{11} (d) 4.05

20. Write the **Life Principle.** "_____
_____."

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Scientific Notation



Divide Scientific Notation

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. An old axiom states that "What goes up must _____."

2. If a ball is thrown into the air, _____ will pull it back down to earth.

3. A lighter than air balloon will _____.

4. Going up and coming down are _____.

5. _____ is the opposite operation from multiplication.

6. The answer to a division problem is called the _____.

7. The number being divided is called the _____.

8. The number of portions the ***dividend*** is divided into is called the _____.

Fill in the diagram below for #9-11.

10. _____)**11.** _____ **9.** _____

Refer to Rule 1 to answer questions 12-15.

12. The numeric portions of numbers in scientific notation form are _____ and then divided.

13. The *powers of ten* are _____.

14. To multiply numbers written in scientific notation form, you must _____ the exponents of the factor of ten.

15. Since division is the opposite of multiplication, you must _____ the exponents instead of add the exponents of the factor of ten.

Refer to Example Set 1 to answer questions 16-24.

16. In a) Step 1, 448 must be changed into _____ form.

17. The conversion described in #16 is placed in the _____ of the fraction.

18. The denominator of the fraction described in #17 is _____.

19. The powers of ten are _____.

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20. In b) _____ is placed in the numerator.

21. The powers of ten are _____.

22. 3 - (-1) = _____

23. The answer must be converted to _____ scientific notation form.

24. $.94 \times 10^4 =$ _____ $\times 10^3$

Refer to Example Set 2 to answer questions 25-27.

25. Convert 25,000 to scientific notation. _____

26. You must _____ the numeric portion.

27. You must _____ the exponents of the powers of ten.

Divide the following numbers. Write your answers on the blanks in proper scientific notation form. Use the space provided to show your work.

28. $45 \div (.5 \times 10^1) =$ _____

29. $810 \div (3 \times 10^2) =$ _____

30. $(6.4 \times 10^8) \div (8 \times 10^4) =$ _____

What is the correct answer to the following problems?

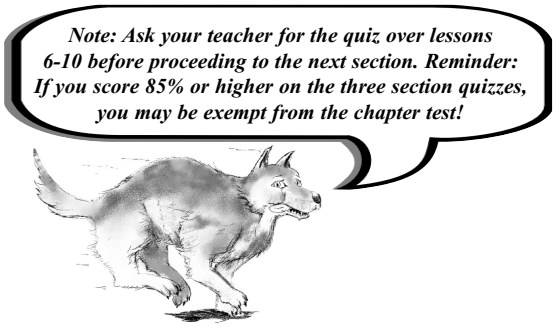
31. $(3.6 \times 10^5) \div (1.2 \times 10^{-3}) =$ _____

(a) 3 (b) 3×10^2 (c) 300,000,000 (d) 3×10^8

32. $(5.68 \times 10^{-7}) \div (8 \times 10^{-10}) =$ _____

(a) 7×10^3 (b) 7×10^{-3} (c) 7.1×10^2 (d) $.71 \times 10^{-3}$

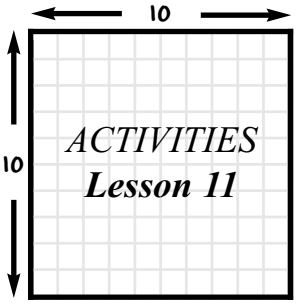
33. Write the **Life Principle.** "_____
_____."

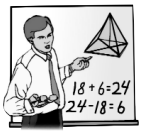


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Name: _____

Date: _____ Grade: _____





Fundamentals

Estimates

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. An educated guess is a(n) _____.

2. ***Estimations*** are important in many areas of _____.

3. Business _____ make educated guesses as to the profitability of a product.

4. A(n) _____ is a person who is willing to take risks in developing a business venture.

5. Government leaders make _____ based on estimations.

6. _____ estimate the cost of constructing houses, office buildings, roads and bridges.

7. Estimations help you get an idea of what the _____ of a thing will be.

8. Sometimes you must recall _____ knowledge to work a problem.

Refer to Example Set 1 to answer questions 9-12.

9. _____ is between 1 and 4.

10. The value of _____ must be between the value of $\sqrt{1}$ and the value of $\sqrt{4}$.

11. Professor K made a _____ or estimation of the value of the $\sqrt{3}$.

12. An estimate does not have to be _____.

Refer to Example Set 2 to answer questions 13-17.

13. To make the estimate, Professor K rounded the numbers to the _____ place.

14. Next, Professor K _____ the numbers he rounded in the *hundreds* column.

15. Professor K estimated the sum of these numbers to be _____.

16. Professor K made a relatively _____ estimation by rounding to the *hundreds* place.

17. Numbers can be rounded to other _____ values to make estimations.

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Refer to Example Set 3 to answer questions 18-20.

18. The numbers were rounded to the _____ place.

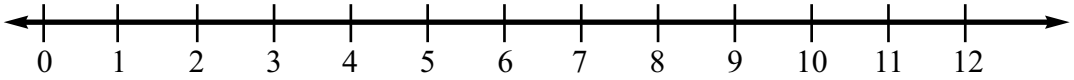
19. Professor K _____ the rounded numbers.

20. Professor K's estimate was very _____ to the actual sum.

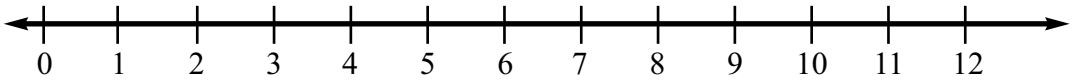
21. The more digits that are used to make an estimate makes the estimate more _____.

Work the following problems in the space provided. Write your answers on the blanks provided.

22. Estimate the value of $\sqrt{5}$ and show the value with a large dot on the number line below.



23. Estimate the value of $\sqrt{47}$ and show the value with a large dot on the number line below.



24. Professor K believes that a good estimate for $\sqrt{97}$ is one of the following numbers. Choose the best estimate. _____

(a) 9 (b) 10 (c) 9.5 (d) none of these answers

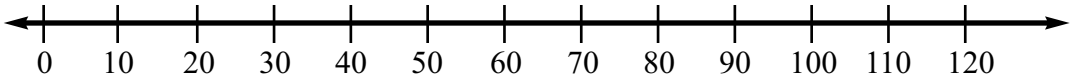
25. Estimate the sum of the following list of numbers to the nearest hundred: 54, 46, 37, 63, 20, 10, 30, 40. _____

26. Estimate the sum of the following list of numbers to the nearest hundred: 540, 146, 327, 163, 270, 100, 310, 140. _____

27. Professor K left for his vacation last week. The first day he drove 65 miles to the airport. Professor K then flew 1,825 miles. The second day Professor K rented a car and drove 235 miles. The third day Professor K retraced his path and returned home. Estimate to the nearest hundred, how many miles Professor K traveled on his vacation.

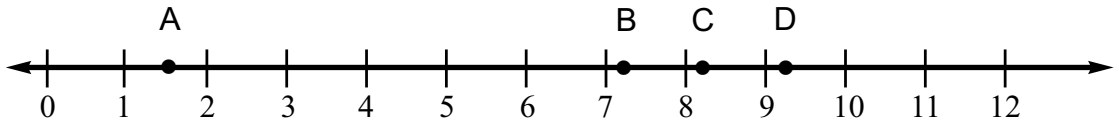
_____

28. Estimate the sum of the following numbers by marking the position of your answer on the number line below. 4, 5, 34, 5, 16, 6, 7, 23 _____



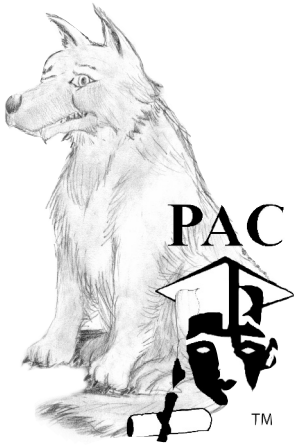
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29. By your best estimation, determine which dot (•) on the following number line is the best representation of $\sqrt{55}$. _____



30. Write the **Life Principle.** "_____
_____."

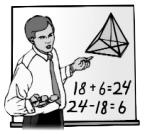
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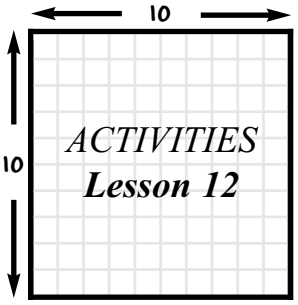
Name: _____

Date: _____ Grade: _____



Fundamentals

More Estimations



You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. _____ can be made in various ways.

2. At large gatherings such as _____ speeches, the number of people in attendance is estimated by sight.

3. In mathematics you can sometimes _____ numbers together to make the estimation easier to calculate.

Refer to Example Set 1 to answer questions 4-10.

4. The numbers in the _____ place are added first.

5. The numbers in the *tens* and *ones* places are grouped to add up as close to _____ as possible.

6. The estimates of the groupings are then _____ together.

7. Ten one-hundreds is _____.

8. The two estimates are combined to obtain the final estimate of _____.

9. The actual sum of the numbers is only a value of _____ away from the estimate.

10. An estimate does not have to be _____.

Refer to Example Set 2 to answer questions 11-13.

11. Professor K estimated the sum of the numbers by first calculating an approximate _____.

12. Professor K then _____ the average by the number of units or numbers averaged.

13. By calculating the average of groups and then multiplying, Professor K was able to make a very _____ estimation.

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Work the following estimation problems.

14. What is the estimated sum if the following numbers are rounded to the nearest ten:
36, 44, 40, 53, 26, 35, 55? _____

15. Choose the closest estimate of the sum of the following group of numbers:
6,549, 3,421, 5,632. _____
(a) 15,700 (b) 15,000 (c) 14,000 (d) 14,500

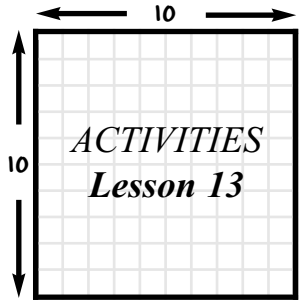
16. Choose the closest estimate of the sum of the following group of numbers:
50,000 47,500 22,000 37,000. _____
(a) 150,000 (b) 157,000 (c) 140,000 (d) 145,000

17. Write the **Life Principle**. "_____
_____."

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Name: _____

Date: _____ Grade: _____





Percent

More Interest

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. A period of time at which a loan is due and payable is called the _____.

2. The ***balance*** of loan is the amount of money _____.

3. To pay off a loan is to repay the loan in full. _____ (a) True or (b) False

Refer to Example Set 1 to answer questions 4-10.

4. The simple interest formula is _____.

5. The principal of the loan Rachael obtained is _____.

6. There are _____ months in one year.

7. $\frac{6}{12} = \frac{6}{_____ \bullet 2} = \frac{1}{2}$

8. 6% = _____ (decimal)

9. .06 • .5 = _____

10. I = 10,000 • .06 • .5 = _____

Refer to Example Set 2 to answer questions 11-16.

11. The *principal* in this example is _____.

12. The *rate* in this example is _____.

13. The *time* in this example is _____.

14. $\frac{18}{12} = \frac{12+6}{12} = \frac{12}{12} + \frac{6}{12} = _____ + \frac{1}{2} = 1\frac{1}{2}$

15. .05 • 1.5 = _____.

16. I = 20,000 • .05 • 1.5 = _____.

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Calculate the interest in the following problems using the simple interest formula. Show your work and write your answers on the blanks or choose the best answer for each question. Refer to the examples as needed for help in working these problems.

17. Cynthia borrowed $3,000.00 from her brother to purchase a used car. Her brother charged her 4% interest. Cynthia paid the loan back in six months. Calculate how much interest Cynthia paid her brother. $I =$ _____

18. Thomas wanted to start a fruit stand on a corner in his hometown. The lot, building, fixtures and an initial inventory of fruit were to cost Thomas $32,000.00. If he borrowed the money, calculate the amount of interest Thomas would owe at the end of 9 months at a 5% rate of interest. $I =$ _____

19. $I =$ _____ : $P = \$24{,}000.00$; $r = 3\%$; $t = 3$ months.
(a) $2,160.00 (b) $180.00 (c) $1,800.00 (d) $150.00

20. $I =$ _____: $P = \$12{,}000.00$; $r = 10\%$; $t = 18$ months.
(a) $1,800.00 (b) $1,200.00 (c) $216.00 (d) $2,160.00

21. $I =$ _____: $P = \$18{,}000.00$; $r = 8\%$; $t = 24$ months.
(a) $1,440.00 (b) $360.00 (c) $288.00 (d) $2,880.00

22. $I =$ _____: $P = \$15{,}000.00$; $r = 2\%$; $t = 15$ months.

23. $I =$ _____: $P = \$8{,}000.00$; $r = 4\%$; $t = 3$ months.

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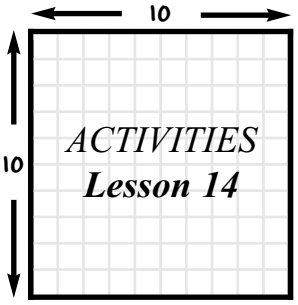
24. I = _____: P = \$2,500.00; r = 5%; t = 6 months.

25. Write the **Life Principle**. "_____
_____."

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Converting

Temp Conversions (°F to °C)

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The student that Kevin met was from _____.

2. The unit of temperature in the English System with 180 equal divisions between the freezing point and the boiling point is degrees _____.

3. The normal unit of temperature in the Metric System with 100 equal divisions between the freezing point and boiling point of water is degrees _____.

4. The formula for converting ***Fahrenheit*** temperatures into ***degrees Celsius*** is C = _____.

5. The letter, F, means _____.

Refer to Example Set 1 to answer questions 6-9.

6. _____ °F is substituted into the formula, $C = (F - 32)$.

7. In Step 3, (14 - 32) = _____.

8. In Step 4, fill in the missing number in the calculations in the numerators:

$5 \bullet (-18) = 5 \bullet$ ____ $\bullet (-2)$.

9. $14°F$ = _____ $°C$

Refer to Example Set 2 to answer questions 10-13.

10. In Step 2, _____ °F is substituted into the formula.

11. In Step 3, (113 - 32) = _____.

12. In Step 4, 81 = _____ • _____

13. $113°F$ = _____ $°C$

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Work the following problems converting Fahrenheit units of temperature into Celsius units of temperature. Set up the conversions in the space provided and write the best answers on the blanks.

14. Convert 23°*F* into degrees Celsius. _____ °*C*

(a) -16.2°*C* (b) 5°*C* (c) -5°*C* (d) 0°*C*

15. Convert 302°F into degrees Celsius. _____ °*C*

(a) 1500°*C* (b) 486°*C* (c) 15°*C* (d) 150°*C*

16. Convert 32°F into degrees Celsius. _____ °*C*

(a) 0°*C* (b) 100°*C* (c) 35°*C* (d) none of the above

17. If the surface temperature of the sun were estimated to be 10,832°F, the temperature in degrees Celsius would be _____?

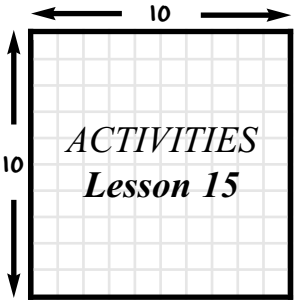
(a) 6,000°*C* (b) 600°*C* (c) 60°*C* (d) 60,000°*C*

18. Write the **Life Principle**. "_____ _____."

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Converting



Temp Conversions (°C to °F)

You are making progress! ***Answer the following questions. Choose the correct answers or fill in the blanks with words, letters or numbers as each question indicates. Check your answers from the Answer Key. Correct all errors, then complete your next goal.***

1. The boiling point of water is _____ °*F*.

2. The formula for converting degrees Celsius into degrees Fahrenheit is *F* = _____.

Refer to Example Set 1 to answer questions 3-7.

3. Substitute _____ for the value of *C* into the formula.

4. The _____ is performed first.

5. The rules for multiplying and _____ fractions must be followed.

6. In Step 3, -25 = 5 • (_____).

7. -25°*C* = _____ °*F*.

Refer to Example Set 2 to answer questions 8-12.

8. _____ °*C* is substituted into the formula.

9. In Step 3, 105 = 5 • _____

10. In Step 3, $\frac{5}{5}$ = _____ and divides out.

11. In Step 3, 9 • 21 = _____

12. 105°*C* = _____ °*F*

Work the following conversions for temperature using your calculator. Set the problem up in the space provided and write the best answers on the blanks.

13. 70°*C* = _____ °*F*

(a) 15°*F* (b) 15.8°*F* (c) 127.6°*F* (d) 158°*F*

14. 20°*C* = _____ °*F*

(a) 680°*F* (b) 68°*F* (c) 70°*F* (d) 77.6°*F*

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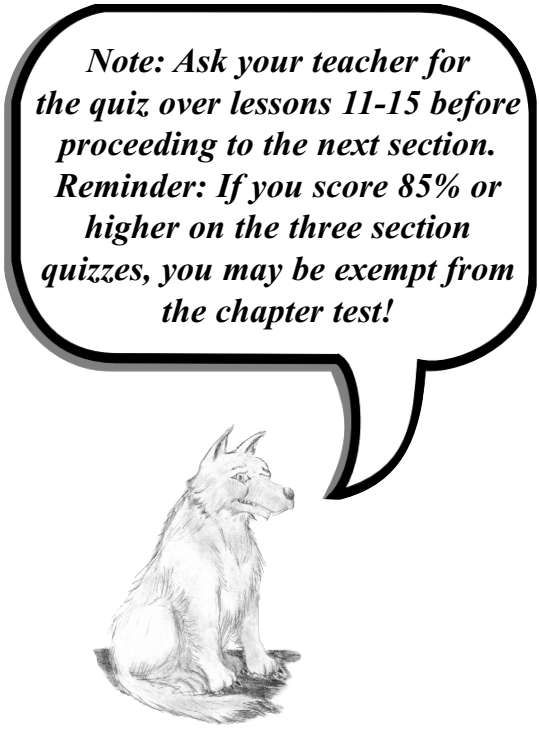
15. 60°*C* = _____ °*F*

16. 200°*C* = _____ °*F*

17. 15°*C* = _____ °*F*

18. 45°*C* = _____ °*F*

19. Write the **Life Principle**. "_____
_____."



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Basic Math Skills

Mathematics Charts

LENGTH - ENGLISH SYSTEM

12 inches	=	1 foot
3 feet	=	1 yard
5.5 yards	=	1 rod
320 rods	=	1 mile
1,760 yards	=	1 mile
5,280 feet	=	1 mile

VOLUME - ENGLISH SYSTEM

1 tablespoon, Tbsp, T	=	3 teaspoons, tsp
1 cup, c	=	16 tablespoons, Tbsp, T
1 pint, pt	=	2 cups, c
1 quart, qt	=	2 pints, pts
1 gallon, gal	=	4 quarts, qts

WEIGHT - ENGLISH SYSTEM

1 pound, lb	=	16 ounces, oz
1 hundredweight, cwt	=	100 pounds, lbs
1 ton	=	20 hundredweight, cwt
1 ton	=	2000 pounds, lbs

LENGTH - METRIC SYSTEM

1 meter	=	1,000 millimeters
1 meter	=	100 centimeters
1 kilometer	=	1,000 meters
1 centimeter	=	10 millimeters

VOLUME - METRIC SYSTEM

1 liter	=	1,000 milliliters
1 liter	=	100 centiliters
1 kiloliter	=	1,000 liters
1 centiliter	=	10 milliliters

WEIGHT - METRIC SYSTEM

1 gram	=	1,000 milligrams
1 gram	=	100 centigrams
1 kilogram	=	1,000 grams
1 centigram	=	10 milligrams

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Mathematics Charts

PERFECT SQUARES

$\sqrt{1}=1$	$\sqrt{25}=5$	$\sqrt{81}=9$	$\sqrt{169}=13$
$\sqrt{4}=2$	$\sqrt{36}=6$	$\sqrt{100}=10$	$\sqrt{196}=14$
$\sqrt{9}=3$	$\sqrt{49}=7$	$\sqrt{121}=11$	$\sqrt{225}=15$
$\sqrt{16}=4$	$\sqrt{64}=8$	$\sqrt{144}=12$	$\sqrt{256}=16$

PERFECT CUBES

$\sqrt[3]{1}=1$	$\sqrt[3]{-8}=-2$	$\sqrt[3]{64}=4$	$\sqrt[3]{-125}=-5$
$\sqrt[3]{-1}=-1$	$\sqrt[3]{27}=3$	$\sqrt[3]{-64}=-4$	$\sqrt[3]{216}=6$
$\sqrt[3]{8}=2$	$\sqrt[3]{-27}=-3$	$\sqrt[3]{125}=5$	$\sqrt[3]{-216}=-6$

$$P = \frac{\text{the number of elements in the set containing favorable outcomes}}{\text{the number of elements in the sample set}}$$

$$\textit{Midpoint} = \left(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2}\right)$$

FORMULAS

Surface Area	Area	Volume	Perimeter/ Circumference	Others
Sphere: $A_s = 4\pi r^2$	**Triangle:** $A = {}^1\!/_2 bh$	**Sphere:** $V = {}^4\!/_3 \pi r^3$	**Perimeter of a Rectangle:** $P = 2w + 2l$	**Pythagorean Theorem:** $c^2 = a^2 + b^2$
Cylinder: $A_s = 2\pi rh + 2\pi r^2$	**Rectangle:** $A = l \times w$	**Cone:** $V = {}^1\!/_3 \pi r^2 h$	**Circumference of a Circle:** $C = 2\pi r$ or $C = \pi d$	**Convert to Fahrenheit:** $F = {}^9\!/_5 C + 32$
Cube: $A_s = 6s^2$	**Circle:** $A = \pi r^2$	**Rectangular Prism:** $V = l \times w \times h$		**Convert to Celsius:** $C = {}^5\!/_9 (F - 32)$
Lateral Surface Area of a Cone: $A_{ls} = \pi rl$	**Trapezoid:** $A = {}^1\!/_2 (b_1 + b_2)h$	**Square Pyramid:** $V = ({}^1\!/_3) lwh$		**Distance:** $d = r \bullet t$
		Triangular Prism: $V = {}^1\!/_2 bhl$		**Slope:** $y = mx = b$
		Cylinder: $V = \pi r^2 h$		**Simple Interest:** $I = prt$

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Mathematics Charts

TIME CONVERSIONS

1 week = 7 days
1 year = 12 months

CONVERSIONS

English to Metric	
1 ounce (oz)	28.35 grams (g)
1 pound (lb)	454 grams (g)
1 ton (T)	907.2 kilograms (kg)

Metric to English	
1 gram (g)	.035 ounce (oz)
1 kilogram (kg)	2.2 pounds (lb)
1 metric ton (mt)	2200 pounds (lb)

English to Metric	
1 cubic inch	16.39 cubic cm
1 gallon	3.785 liters
1 cubic foot	28.316 liters
1 quart	.946 liters

Metric to English	
1 cubic cm	.061 cubic inch
1 cubic meter	35.315 cubic feet
1 liter	1.05 quarts
1 liter	.264 gallon

English to Metric	
1 inch	2.54 cm
1 foot	0.3048 meter
1 yard	0.9144 meter
1 mile	1.6 km

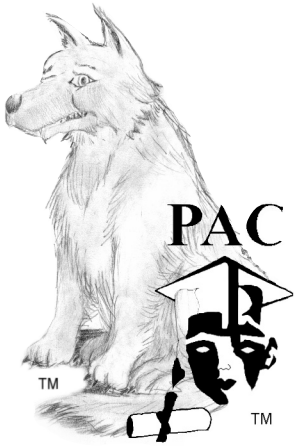
Metric to English	
1 centimeter	0.3937 in.
1 meter	39.37 in.
1 meter	1.09 yds
1 kilometer	0.6213 mile

AREA CONVERSIONS

1 square centimeter = 0.155000 sq in.
1 square meter = 10.763910 sq ft
1 square inch = 645.16 sq mm
1 square foot = 0.09290304 sq meter
1 square yard = 0.836127 sq meter
1 square foot = 144 sq in.

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