June 2013

To the Students Taking Algebra at Baines for the 2013-2014 School Year:

Next year will be an exciting and challenging year as you take *high school credit* Algebra I Pre-AP. We spend very little time reviewing concepts from 7th and 8th grade math as you are already expected to be proficient in several skills before taking Algebra. Some of the important skills you need to have in order to be successful in algebra include: integer operations, decimal operations, fraction operations, exponents and square roots, order of operations, evaluating expressions, solving simple 1- and 2-step equations, probability and statistics, geometry, and measurement concepts.

This packet has been put together with those skills in mind. To help you strengthen and keep your math skills over the summer, we would like you to complete this packet. If you work one to two pages each week, you'll have the packet completed by the beginning of the school year. This packet will be your first grade in Algebra class. It is due the first full week of school and will be followed with a test over the content in this packet. If you feel you need extra practice beyond that provided in this packet there are several resources available online or in the public library.

In order to receive credit for this packet, you must show all work (on notebook paper if there isn't enough room on the page.) Though graphing calculators will frequently be used in class, the intent of this packet is to reinforce proficiency in basic *skills*. *No calculators may be used in completing this packet unless otherwise stated.* Answers with no work will receive no credit!

We also recommend that you look for a graphing calculator during the summer. There is a class set of TI *N*spire graphing calculators available for use during the school day, but calculators are not available for check-out. We strongly suggest you purchase a TI *N*spire CX or the TI *N*spire APP (currently only available for iPads.) These will also be used again in other high school math classes. Please write or engrave your name on your calculator before bringing it to school. Mrs. Collins has an engraver if you would like for her to engrave it for you. Important: Please bring the Reward Points Card (on the back of the calculator packaging) to Mrs. Collins!

We hope you have an enjoyable summer. We look forward to meeting you next year.

Sincerely,

Baines Middle School Algebra Teachers

Show ALL work where applicable. You are permitted to complete your work on separate notebook paper if you need additional space. *No calculators may be used in completing this packet.* Answers with no work will receive no credit!

If you need to reprint any portion of this packet, go to www.fortbendisd.com/campuses/bms. The summer packet will be linked to the BMS homepage.

Additional textbook support can be found in the 8th grade online textbook. To access the online textbook, go to tx.msmath3.com and click Enter. Click Online Student Edition and then click Online Student Edition on the next screen as well. Click Enter a Class Code. **The access code/class code is** DF9F6D1070.

If you have any questions during the summer, feel free to contact Stephanie Collins at 281-634-7545 or Stephanie.Collins@fortbendisd.com.

Objective: Adding and subtracting with integers.

Review the following addition and subtraction rules.

- To add two numbers with the same sign, *add* their absolute values. The sum has the same sign as the numbers.
- To add two numbers with different signs, find the *difference* of their absolute values. The sum has the same sign as the number with the greater absolute value.
- Rewrite subtraction problems as addition problems by adding the opposite of the second value. To subtract a number, add its opposite. (Some students may be familiar with "add a line, change the sign.")

Objective: Multiplying and dividing integers.

Review the following multiplication and division rules:

- The product or quotient of two positive numbers is positive.
- The product or quotient of two negative numbers is positive.
- The product or quotient of a negative number and a positive number is negative.
- It is mathematically incorrect to divide by 0. When dividing by zero in arithmetic, the answer is *undefined*.

_____ 1) $(-5)(-11)$

_____ 2) $7+(-11)$

_____ 3) $-15*0$

_____ 4) $36+12+(-14)$

_____ 5) $-8+15+(-24)+17$

_____ 6) $(-15)(15)$

_____ 7) $(-56)+24+43+(-17)$

_____ 8) $19-31$

_____ 9) $(3)(-5)(2)$

_____10) $5*(-3)(-8)$

_____ 11) $(-11)(-5)(-3)$

_____ 12) $-169\div(-13)$

_____ 13) $(-57)-(-43)$

_____ 14) $65-(-335)$

_____ 15) $-175-(-305)$

_____ 16) $(-99)+(-77)+(-1)$

_____ 17) $42\div(-54)$

_____ 18) $8-56+12-4$

_____ 19) $8+(-10)-(-7)$

_____ 20) $13-18+10-9$

_____ 21) $\frac{-60}{-15}$

_____ 22) $13+(-38)-(-42)-17$

_____ 23) $-32+(-7)-(-40)+6$

_____ 24) $4+(-20)-18-(-13)$

_____ 25) $(3)(-2)(6)(-4)$

_____ 26) $\frac{-1080}{40}$

_____ 27) $(-7)(-2)(-5)(-3)$

_____ 28) $(-4)(6)(-5)(-6)$

_____ 29) $\frac{0}{-22}$

_____ 30) $54\div(-6)$

_____ 31) $-84\div3$

_____ 32) $\frac{-15}{0}$

Glencoe 8th grade math online textbook – reference Chapter 1, sections 4, 5, and 6.

Objective: Add and Subtract Fractions.

Review the rules for adding, subtracting, multiplying, and dividing integers. The same rules apply when adding, subtracting, multiplying, and dividing decimals and fractions.

- Find common denominators and equivalent fractions when adding and subtracting.
- Always simplify the answers. Write each answer as a proper fraction or mixed number.

1. $(-7)+3\frac{5}{6}$
2. $\frac{11}{6}-\frac{1}{3}$
3. $4\frac{3}{8}-4\frac{3}{4}$
4. $\left(-1\frac{1}{2}\right)-\left(-2\frac{1}{4}\right)$
5. $\frac{2}{3}-\left(-\frac{5}{3}\right)$
6. $\left(-\frac{3}{2}\right)+4\frac{2}{3}$
7. $\left(-3\frac{2}{3}\right)+\left(-1\frac{1}{4}\right)$
8. $3\frac{1}{4}+\left(-\frac{6}{5}\right)$
9. $2-\left(-3\frac{5}{8}\right)$
10. $\frac{8}{5}-\frac{5}{6}$
11. $\left(-\frac{3}{5}\right)-\left(-3\frac{3}{4}\right)$
12. $4\frac{3}{8}-\left(-1\frac{1}{8}\right)$
13. $\left(-\frac{1}{2}\right)-1\frac{4}{7}$
14. $\left(-1\frac{2}{3}\right)+\left(-1\frac{4}{5}\right)$
15. $1+\left(-\frac{5}{6}\right)$
16. $\left(2\right)-\left(-1\frac{2}{3}\right)$
17. $3+\left(-\frac{1}{2}\right)$
18. $1\frac{1}{2}-\left(-\frac{4}{3}\right)$
19. $\left(-3\frac{3}{8}\right)-3\frac{1}{6}$
20. $4\frac{1}{5}-\left(-\frac{7}{6}\right)$
21. $3\frac{5}{6}-\frac{2}{3}$
22. $\left(-1\right)+3\frac{2}{3}$
23. $\frac{1}{2}-3\frac{7}{8}$
24. $\left(-1\frac{1}{3}\right)+7\frac{1}{4}$
25. $\left(-1\right)-\frac{5}{8}$
26. $3+\left(-\frac{11}{8}\right)$

Objective: Multiply and Divide Fractions.

Review the rules for adding, subtracting, multiplying, and dividing integers. The same rules apply when adding, subtracting, multiplying, and dividing decimals and fractions.

- Multiply the numerators and multiply the denominators when multiplying fractions. If either of the multipliers are mixed numbers, change them to improper fractions.
- To divide fractions: Find the reciprocal of the *second* fraction (divisor) and then multiply by the first fraction (dividend). For example: $\frac{14}{15} \div \frac{7}{5} =$
- Always simplify the answers. Write each answer as a proper fraction or mixed number.

$$\frac{14}{15} \bullet \frac{5}{7} = \frac{70}{105} = \frac{2}{3}$$

1. $\frac{15}{8} \times \left(-\frac{13}{7}\right)$
2. $\left(-3\frac{1}{2}\right) \times \frac{6}{7}$
3. $\frac{3}{5} \times \left(-\frac{15}{23}\right)$
4. $\frac{12}{13} \times \left(-\frac{7}{10}\right)$
5. $5\frac{3}{4} * \left(-\frac{12}{11}\right)$
6. $\left(-1\frac{7}{13}\right) * 4\frac{1}{16}$
7. $3\frac{5}{6} * \left(-\frac{12}{7}\right)$
8. $-3\frac{2}{11} * \frac{1}{7}$
9. $\left(-\frac{1}{2}\right) \bullet \left(-\frac{6}{7}\right)$
10. $\left(-3\frac{3}{8}\right) \bullet \frac{1}{2}$
11. $2 \bullet \left(-\frac{2}{7}\right)$
12. $\left(-3\frac{7}{15}\right) \bullet \frac{5}{13}$
13. $\frac{-1}{4} \div 3\frac{2}{3}$
14. $\left(-\frac{5}{4}\right) \div 13\frac{3}{4}$
15. $1\frac{3}{5} \div \left(-1\frac{8}{9}\right)$
16. $\left(-3\frac{5}{12}\right) \div \left(-\frac{13}{8}\right)$
17. $\left(-\frac{1}{8}\right) \div \frac{3}{2}$
18. $1\frac{1}{3} \div \frac{14}{5}$
19. $\frac{8}{33} \div 3\frac{5}{11}$
20. $2\frac{6}{7} \div \frac{2}{3}$
21. $\dfrac{\frac{5}{6}}{\frac{10}{11}}$
22. $\dfrac{\frac{1}{3}}{-\frac{1}{2}}$
23. $\dfrac{\frac{4}{7}}{2}$

Objective: Decimal and Fraction Operations – Mixed Practice

- When you encounter a fraction and a decimal in the same problem, convert one or the other. When trying to convert a fraction to a decimal, you can **NOT** use a repeating decimal in your calculations. In that case, you must convert all numbers to fractions.
- Always simplify the answers.
- In general, if a problem has fractions, answer should be in fraction form. If the problem has decimals, the answer should be in decimal form. If both, you choose.

_____ 1) $2\frac{1}{2} + (-7.5)$

_____ 2) $-5\frac{2}{7} + \left(-4\frac{3}{14}\right)$

_____ 3) $\frac{27}{100} - 3.06$

_____ 4) $1.91 - (-3.08)$

_____ 5) $(-17.9) + \left(-3\frac{9}{10}\right)$

_____ 6) $-1 + 0.4$

_____ 7) $-13\frac{5}{9} - \left(-7\frac{2}{3}\right)$

_____ 8) $9\frac{2}{5} - 11.5$

_____ 9) $(0.5)(-0.9)$

_____10) $(7.3)\left(-\frac{1}{2}\right)$

_____ 11) $\left(-\frac{8}{15}\right)(.35)\left(-\frac{5}{6}\right)$

_____ 12) $-1.2 \div \frac{2}{5}$

_____ 13) $0.36 \div (-4)$

_____ 14) $-12 \div \frac{2}{7}$

_____ 15) $-\frac{9}{25} \div (-0.9)$

_____ 16) $\frac{4}{5} \div (-0.05)$

_____ 17) $-0.8\overline{)33.2}$

_____ 18) $-\frac{1}{6}\left(-4\frac{4}{7}\right)$

_____ 19) $3\overline{)-1.4}$

_____ 20) $(4.875)\left(-2\frac{2}{9}\right)$

_____ 21) $\frac{-3.2}{-10}$

_____ 22) $2\left(\frac{2}{3}\right) + 3\left(\frac{1}{3}\right)$

_____ 23) $\frac{3}{4}(3 - 33)$

Objective: Exponents and Square Roots

Expressions containing repeated factors can be written using exponents.

Example 1 **Write $7 \cdot 7 \cdot 7 \cdot 7 \cdot 7$ using exponents.**

Since 7 is used as a factor 5 times, $7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 = 7^5$.

Example 2 **Write $p \cdot p \cdot p \cdot q \cdot q$ using exponents.**

Since p is used as a factor 3 times and q is used as a factor 2 times, $p \cdot p \cdot p \cdot q \cdot q = p^3 \cdot q^2$.

The square root of a number is one of two equal factors. The radical sign $\sqrt{\ }$ is used to indicate the positive square root.

Examples **Find each square root.**

1. $\sqrt{1}$ — Since $1 \cdot 1 = 1$, $\sqrt{1} = 1$.
2. $-\sqrt{16}$ — Since $4 \cdot 4 = 16$, $-\sqrt{16} = -4$.
3. $\sqrt{0.25}$ — Since $0.5 \cdot 0.5 = 0.25$, $\sqrt{0.25} = 0.5$.
4. $\sqrt{\frac{25}{36}}$ — Since $\frac{5}{6} \cdot \frac{5}{6} = \frac{25}{36}$, $\sqrt{\frac{25}{36}} = \frac{5}{6}$.

Example **Estimate $\sqrt{79.3}$ to the nearest whole number.**

- The first perfect square less than 79.3 is 64.
- The first perfect square greater than 79.3 is 81.

$64 < 79.3 < 81$ Write an inequality.

$8^2 < 79.3 < 9^2$ $64 = 8^2$ and $81 = 9^2$

$8 < \sqrt{79.3} < 9$ Take the square root of each number.

So, $\sqrt{79.3}$ is between 8 and 9. Since 79.3 is closer to 81 than 64, the best whole number estimate for $\sqrt{79.3}$ is 9.

Write each expression using exponents.

_____ 1. $8 \bullet 8 \bullet a$ _____ 2. $5 \bullet q \bullet 3 \bullet q \bullet q \bullet 3$ _____ 3. $3 \bullet 7 \bullet a \bullet 9 \bullet b \bullet a \bullet 7 \bullet b \bullet 9 \bullet b \bullet a$

Evaluate each expression.

_____ 4. 2^3

_____ 5. $3^3 \bullet 4^2$

_____ 6. $\dfrac{3^3 \bullet 10^2}{3^2 \bullet 10^4}$

_____ 7. $\dfrac{4^2 \bullet 3^5 \bullet 2^4}{4^3 \bullet 3^5 \bullet 2^2}$

_____ 8. $(0.2)^3 \bullet \left(\dfrac{1}{2}\right)^4$

Find each square root.

_____ 9. $\sqrt{81}$

_____ 10. $\pm\sqrt{36}$

_____ 11. $\sqrt{\dfrac{64}{225}}$

_____ 12. $\pm\sqrt{1.44}$

_____ 13. $-\sqrt{\dfrac{16}{25}}$

_____ 14. $4 \bullet \sqrt{0.25}$

Estimate each square root to the nearest whole number.

_____ 15. $\sqrt{44}$

_____ 16. $\sqrt{15.6}$

_____ 17. $\sqrt{85.1}$

_____ 18. $\sqrt{197}$

Order from least to greatest:
$\sqrt{91}, 7, \sqrt{38}, 5$

_____

Glencoe 8th grade math online textbook – reference Chapter 3, sections 1 and 2.

Objective: Using the order of operations.

Order of Operations:

1. Perform any operations inside grouping symbols (parentheses.)
2. Simplify any term with exponents.
3. Multiply and divide in order from left to right.
4. Add and subtract in order from left to right.

Many students use PEMDAS or **GEMDAS** to help them remember the order to perform operations.

Parentheses/**G**rouping symbols

Exponents

Multiply and **D**ivide

Add and **S**ubtract.

Order of Operations with Integers

Simplify the following expressions. Show all work under each problem or use notebook paper. Next to each step, write the operation you used to simplify that step.

1. $(19-(-9+(-8)+3))\div(5-8)$

2. $5-10+(9+10-7)\div(-2)$

3. $1-(-15)-(6-10\times12-11)$

4. $1-(-1-1)+15\times(-36\div9)$

5. $\dfrac{3\times3\times3}{-11-(-6-2)}$

6. $\dfrac{(36-(-3)\times2}{(6-(-7)-15}$

7. $15+(7-10)\times\dfrac{-10}{8-13}$

8. $(-13\times5-(-2\times2-(-2)))\div9$

9. $(-21\times3\times2)\div(2-(-7))$

10. $((-39-(-9))\times2)\div(3-3^2)$

11. $24\div(-7-(-13))+(-3)+10-1$

Glencoe 8th grade math online textbook – reference Chapter 1, section 2.

Objective: Using the order of operations - Fractions.

Simplify the following expressions. Show all work under each problem or use notebook paper. Next to each step, write the operation you used to simplify that step.

1. $4\frac{2}{3}+\left(\frac{2}{5}+\frac{6}{5}\right)^2$

2. $2\frac{1}{6}+\left(\frac{1}{2}+3\frac{4}{5}\right)\times 2\frac{2}{5}$

3. $\left(3\frac{3}{4}+\frac{7}{6}-\frac{11}{6}\right)\div 2$

4. $3\frac{1}{3}+1\frac{4}{5}-\frac{1}{5}+1\frac{1}{2}$

5. $1\frac{1}{6}-\frac{1}{3}\div 1\frac{1}{3}+2\frac{2}{3}$

6. $\left(2\frac{1}{3}\right)^2\div\left(1-\frac{2}{5}\right)$

7. $2\times\frac{1}{2}-\left(2-\frac{7}{6}\right)$

8. $2\div\left(\frac{3}{2}+3\frac{1}{2}\right)+3\frac{2}{3}$

9. $3\frac{1}{4}+2\frac{1}{3}-\left(3\frac{1}{3}+1\right)$

10. $\frac{1}{2}\div 1\frac{1}{2}\times\frac{3}{5}+3\frac{1}{2}$

Glencoe 8th grade math online textbook – reference Chapter 1, section 2.

Objective: Using the order of operations - Decimals.

Simplify the following expressions. Show all work under each problem or use notebook paper. Next to each step, write the operation you used to simplify that step.

1. $7.6-(-1.5-(-7.1-(-1.38)))$

2. $9.5-(-5.5)-(-1-5.5)$

3. $(0.9\div(-5)-5.3)\times(-2.4)$

4. $6.2\times(-8.9+2.4)\div 3.3$

5. $9.52\div(-8.5+9.7)\times(-0.8)$

6. $1.2-(-9.8+7.8)^2$

Glencoe 8th grade math online textbook – reference Chapter 1, section 2.

Objective: Using the order of operations – Mixed Practice.

Simplify the following expressions. Show all work under each problem or use notebook paper. Next to each step, write the operation you used to simplify that step.

_____ 1) $15 - 7 \cdot 3$

_____ 2) $7 * 8 - 5 + 6 \div 3$

_____ 3) $(3 - 7)4 - 12$

_____ 4) $12 \div 4 + 2 \cdot (-7) - 18 \div (-3)$

_____ 5) $4^2 - 2^4$

_____ 6) $6(5 + 12 \div 6)^2$

_____ 7) $\left(\frac{3}{4} + \frac{2}{3}\right) \cdot \frac{1}{2}$

_____ 8) $\frac{1}{6} + \left(\frac{2}{3}\right)^2$

_____ 9) $\frac{7}{10} - \frac{4}{5} \div \left(\frac{2}{3} + \frac{2}{5}\right)$

_____ 10) $-5 * 3^3$

_____ 11) $(7 + 2)(-3) + 9$

_____ 12) $18 \div [-15 \div 5]$

_____ 13) $-6.2 + 0.72 \div 0.9$

_____ 14) $35 - 3(6 - 2)^3$

_____ 15) $(49 - 10) \div (52 / 4)$

_____ 16) $\frac{3}{4} \div \frac{2}{3} - \frac{3}{8}$

Insert grouping symbols "( )" to make the equation true.

17) $8 + 2^3 \div 4 = 4$

18) $6 + 7 \bullet 2 + 5 = 55$

Glencoe 8th grade math online textbook – reference Chapter 1, section 2.

Objective: Evaluate Expressions

To evaluate, or find the value of, an algebraic expression, first replace the variable or variables with the known values to produce a numerical expression, one with only numbers and operations. Then find the value of the expression using the order of operations.

Example 1 **Evaluate the expression $3x^2 - 4y$ if $x = 3$ and $y = 2$.**

$$\begin{aligned} 3x^2 - 4y &= 3(3)^2 - 4(2) && \text{Replace } x \text{ with 3 and } y \text{ with 2.} \\ &= 3(9) - 4(2) && \text{Evaluate the power first.} \\ &= 27 - 8 && \text{Do all multiplications.} \\ &= 19 && \text{Subtract.} \end{aligned}$$

Evaluate each expression if $w = 2$, $x = 6$, $y = 4$, and $z = 5$.

_____ 1) $2x + y$

_____ 2) $3z - 2w$

_____ 3) $9 + 7x - y$

_____ 4) wx^2

_____ 5) $(wx)^2$

_____ 6) $\dfrac{x^2 - 3}{2z + 1}$

_____ 7) $\dfrac{wz^2}{y + 6}$

Evaluate each expression if $a = 4$, $b = 3$, and $c = 6$.

_____ 8) $a(3 + b) - c$

_____ 9) $2(ab - 9) \div c$

_____ 10) $3b^2 + 2b - 7$

_____ 11) $\dfrac{a^2 + a}{bc + (b - 1)} - c$

_____ 12) $\dfrac{ab + bc}{2b - 8}$

Evaluate each expression if $p = 5$ and $q = 12$.

_____ 13) $\dfrac{4q}{q + 2(p + 1)}$

_____ 14) When a temperature in degrees Fahrenheit F is known, the expression $\dfrac{5F - 160}{9}$ can be used to find the temperature in degrees Celsius, C. If a thermometer shows that the temperature is 50°F, what is the temperature in degrees Celsius?

_____ 15) The cost of renting a car for a day is given by the expression $\dfrac{270 + m}{10}$, where m is he number of miles driven. How much would it cost to rent a car for one day and drive 50 miles?

_____ 16) Philip is able to spin his yo-yo along a circular path. The yo-yo is kept in motion by a force which can be determined by the expression $\dfrac{mv^2}{r}$ (m = mass, v = velocity, and r = radius.) Evaluate the expression when the m = 0.12 kg, the v = 4 m/s and the r = 1.5 m. (Force is measured in Newtons.)

Glencoe 8th grade math online textbook – reference Chapter 1, section 2.

Objective: Evaluate Expressions, continued.

17) $m + m(-6 + n)$ if $m = -1$ and $n = 2$

18) $p(q^2 - q)$ if $p = 6$ and $q = -1$

19) $j^3 - (2 + k)$ if $j = 1$ and $k = 5$

20) $x - (x - xy)$ if $x = -5$ and $y = 3$

21) $j - (-3 + h^2)$ if $h = 3$ and $j = -4$

22) $(x - y^2) \div 6$ if $x = 1$ and $y = 5$

23) $-6 - (a - a) - b$ if $a = -\frac{1}{2}$ and $b = \frac{2}{3}$

24) $n(m - (-2 + m))$ if $m = -4$ and $n = -3$

25) $(-6 - x)(y - x)$ if $x = 4$ and $y = 1$

26) $y + 6 - x + z$ if $x = 4$, $y = 5$, and $z = -2$

27) $q^2 - p^3$ if $p = -4$ and $q = 2$

28) $p - q^3 \div 6$ if $p = 3$ and $q = -6$

29) $-3 + y - (z + z)$ if $y = 6$ and $z = -2$

30) $x(y + x) - 5$ if $x = -5$ and $y = -6$

Objective: Write Expressions, Equations, and Inequalities
Translate each phrase into an algebraic expression, an equation, or an inequality.

1. A number decreased by 3 is equal to 9.
2. The quotient of *n* and 5 is equal to 17.
3. A number decreased by 13 is equal to 25.
4. 6 more than *n* is less than or equal to 39.
5. Twice *u* is less than or equal to 32.
6. A number *y* cubed is 28.
7. *x* cubed
8. Fourteen less than *n* is greater than 37.
9. the product of 7 and *n*
10. A number *x* added to 11 is greater than 35.
11. Eight less than *y* is less than or equal to 5.
12. half of *z*
13. the product of *n* and 9
14. A number *n* decreased by 5 is 37.
15. the difference of 27 and *x*
16. a number increased by 7
17. The quotient of a number and 3 is 41.
18. Eleven more than *a* is greater than 47.
19. Twice *z* is greater than 33.
20. A number squared is 23.
21. The sum of a number and 5 is 38.
22. A number squared is less than 20.
23. Half of *x* is greater than or equal to 22.
24. Twice *v* is greater than or equal to 34.
25. a number minus fourteen
26. eight more than twice k
27. the sum of twelve and five times a number
28. When a number is multiplied by –6, the result is –90.
29. Twenty-four minus the product of *x* and –8 is 96.
30. When 22 is subtracted from three times a number, the result is –1.
31. Forty-eight is equal to eight times the quantity *r* minus 9.

Glencoe 8th grade math online textbook – reference Chapter 1, sections 2 & 7

Objective: Translate word problems into equations.
For each word problem, identify the variable and then write an equation. The first one is done as an example.

1. Chelsea and her friend found some money under the couch. They split the money evenly, each getting $11.55. Write an equation to represent how much money they found.
    a. Let m = the amount of money the girls found.
    b. Equation: $\frac{m}{2} = 11.55$

2. A colony of ants carried away 9 of your muffins. That was $\frac{3}{8}$ of all of them! Write an equation that would represent how many muffins you had before the ants stole some of them.

3. Your father gave you $12 with which to buy a present. This covered $\frac{6}{7}$ of the cost. What equation would be used to find the cost of the present?

4. Castel and his best friend found some money in an envelope. They split the money evenly, each getting $25.31. Write an equation to represent how much money they found.

5. Write an equation to represent Daniel's age if he will be 58 years old in 14 years.

6. Last week Kali ran 22.6 miles more than Abhasra. Kali ran 34.9 miles. Write an equation to represent the number of miles that Abhasra ran.

7. Kim sold half her comic books and then bought sixteen more. She now has 42. Write an equation that would represent the number of comic books she started with.

Glencoe 8th grade math online textbook – reference Chapter 1, sections 2 & 7

8. Scott had some candy to give to his four children. He first took 7 pieces for himself and then evenly split the rest among his children. If each child received three pieces of candy, write an equation to represent how many pieces Scott started with.

9. Write an equation to represent how old I am if 500 reduced by 4 times my age is 212.

10. Jasmine bought five posters. A week later, half of all of her posters were destroyed in a fire. If there are only 18 posters left, write an equation to represent how many posters she started with.

11. Wilbur's Bikes rents bikes for $20 plus $5 per hour. John paid $50 to rent a bike. Write an equation to represent how many hours he rented the bike.

12. Ron won 43 pieces of gum playing horseshoes at the county fair. At school, he gave three pieces to every student in his Algebra class. Write an equation to represent how many students are in his class if he only has 4 pieces left.

13. Mei was going to sell all of her stamp collection to buy a video game. After selling half of them, she changed her mind. She then bought 16 more stamps. Write an equation to represent the number of stamps she started with if she now has 44 stamps.

14. Half of your baseball card collection got wet and was ruined. You bought 10 cards to replace some that were lost. Write an equation to represent how many cards you had before the fire if you now have 35 cards.

Glencoe 8th grade math online textbook – reference Chapter 1, sections 2 & 7

Objective: Translating Expressions

Translate each algebraic expression into a verbal expression. The first has been done for you as an example.

1. $a(b + c)$ the number a multiplied by the sum of b and c
2. $rs - 8$ _____
3. $x(y - z)$ _____
4. $rs + tu$ _____
5. $mn - 4$ _____
6. $j(w + v)$ _____
7. $\frac{u}{p} + 6$ _____
8. $(t - 17)11$ _____
9. $d - xy$ _____
10. $(a + b) - ru$ _____
11. $xy + ab$ _____
12. $\frac{r+t}{r-t}$ _____
13. $abc - 3$ _____
14. $\frac{m}{n} - 25$ _____
15. $j - (t - b)$ _____
16. $(k - 5)u$ _____

Objective: Solve One-Step Equations

You can use the following properties to solve addition and subtraction equations.

- *Addition Property of Equality* — If you add the same number to each side of an equation, the two sides remain equal.
- *Subtraction Property of Equality* — If you subtract the same number from each side of an equation, the two sides remain equal.

You can use the following properties to solve multiplication and division equations.

- *Multiplication Property of Equality* — If you multiply each side of an equation by the same number, the two sides remain equal.
- *Division Property of Equality* — If you divide each side of an equation by the same nonzero number, the two sides remain equal.

1. $-11 = \frac{k}{37}$

2. $n - (-69) = 103$

3. $8 = n - 84$

4. $-71 = -99 - b$

5. $-88x = 968$

6. $44 = \frac{a}{7}$

7. $-63 = -14 + r$

8. $-72n = 6624$

9. $x + (-92) = -140$

10. $37 + a = -15$

11. $\frac{x}{92} = -76$

12. $-1275 = -25n$

13. $-53 = -62 + p$

14. $25 = 55 - m$

15. $x - (-48) = 17$

16. $x + (-44) = 47$

Objective: Solve Two-Step Equations

A **two-step equation** contains two operations. To solve a two-step equation, undo each operation in reverse order.

Vertical Method

$-2a + 6 = 14$	Write the equation.
$-6 = -6$	Subtract 6 from each side.
$-2a = 8$	Simplify.
$\frac{-2a}{-2} = \frac{8}{-2}$	Divide each side by -2.
$a = -4$	Simplify.

Check

$-2a + 6 = 14$	Write the equation.
$-2(-4) + 6 \stackrel{?}{=} 14$	Replace a with -4 to see if the sentence is true.
$14 = 14$ ✓	The sentence is true.

The solution is -4.

1. $-7n-5=51$

2. $\frac{x+9}{6}=4$

3. $2-b=18$

4. $9+\frac{r}{7}=12$

5. $12+\frac{m}{9}=13$

6. $3+\frac{m}{4}=-2$

7. $\frac{-1+n}{25}=-1$

8. $9x-9=-189$

9. $2x+8=-4$

10. $4+11m=-260$

11. $-10+\frac{x}{12}=-8$

12. $\frac{3+n}{4}=4$

13. $\frac{k}{15}-11=-12$

14. $-2n+8=40$

15. $\frac{1+x}{6}=-3$

Objective: Solve One- and Two-Step Equations – Mixed Practice

_____ 1. Two angles are complementary angles. If one angle measures 37°, write and solve an equation to find the missing angle measure.

_____ 2. On one day in Fairfield, Montana, the temperature dropped 84°F from noon to midnight. If the temperature at midnight was -21°F, write and solve an equation to determine the temperature at noon that day.

Solve and check.

3. $y + 12 = -3$

4. $g - 2 = -13$

5. $9b = -72$

6. $-35 = 5n$

7. $-8 = \frac{c}{12}$

8. $\frac{10}{x} = -5$

9. $4x = 44$

10. $34 = -4j$

11. $2h + 9 = 21$

12. $-17 = 6p - 5$

13. $13 = \frac{g}{3} + 4$

14. $5 + \frac{y}{8} = -3$

15. $15 - \frac{w}{4} = 28$

16. $-\frac{1}{2}x - 7 = -11$

Objective: Probability

You can collect data through observations or experiments and use the data to state the **experimental probability** as a ratio of favorable outcomes to the total number of trials.

$$P(\text{event}) = \frac{\text{favorable outcomes}}{\text{number of trials}}$$

Theoretical probability is the ratio of the number of ways the event can occur to the total number of possibilities in the sample space.

$$P(\text{event}) = \frac{\text{favorable outcomes}}{\text{\# of possible outcomes}}$$

Two events are **independent** when the outcome of the second is not affected by the outcome of the first. Examples of independent events: flipping coins; spinning spinners; choosing an item from a bag and *replacing* it before choosing another item.
If A and B are independent events, $P(\text{A and B}) = P(\text{A}) \times P(\text{B})$.

Two events are **dependent** when the outcome of the second is affected by the outcome of the first. Examples of dependent events: choosing an item from a bag and *not replacing* it before choosing a second item from the same bag; selecting a candy, eating it, and selecting another candy.
If A and B are dependent events, $P(\text{A, then B}) = P(\text{A}) \times P(\text{B after A})$.

Suppose you have a drawer of socks containing 15 red, 5 white, 25 green, 20 black, 25 purple, and 10 blue socks. You draw a sock, record its color, and put it back. You do this 100 times with these results: 12 red, 9 white, 27 green, 17 black, 22 purple, and 13 blue. Write each probability as a fraction in simplest form.

	1. *P*(red)	2. *P*(white)	3. *P*(green)	4. *P*(black)	5. *P*(purple)	6. *P*(blue)
Experimental probability						
Theoretical probability						

_____ 7) Suppose you take out a sock, put it on your foot, and take out another sock. Are these events independent or dependent?

_____ 8) What is the probability of drawing a red, putting it on, and then drawing a blue sock?

Express each theoretical probability as a fraction in simplest form and convert to a percent.

_____; _____ 9) *P*(red and blue)

_____; _____ 10) *P*(red, then white)

_____; _____ 11) *P*(green and orange)

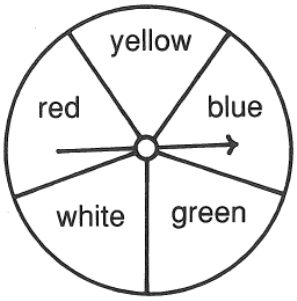
_____; _____ 12) *P*(red, then green)

Why Did the King's Birthday Celebration Last So Long?

Do each exercise and find your answer in the Code Key. Notice the letter under it. Write this letter in the box containing the exercise number.

Code Key	$\frac{1}{100}$	$\frac{1}{5}$	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{4}{5}$	1	$\frac{4}{13}$	$\frac{5}{13}$	$\frac{2}{7}$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{1}{2}$	$\frac{5}{8}$	$\frac{7}{8}$
	R	T	S	N	I	K	P	E	W	Y	H	A	L	G

I. Find each probability if you spin the spinner once.



(1) P(red)

(2) P(green)

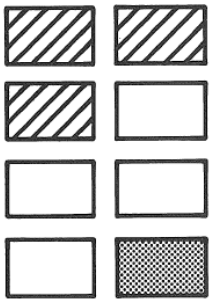
(3) P(blue or white)

(4) P(not yellow)

(5) P(not red)

(6) P(blue or red or yellow)

II. Find each probability if you choose one card at random.



(7) P(striped)

(8) P(white)

(9) P(shaded)

(10) P(white or shaded)

(11) P(striped or white)

(12) P(striped or shaded)

(13) P(not striped)

(14) P(not white)

(15) P(striped or white or shaded)

III. Solve.

(16) What is the probability of guessing the correct answer to a multiple choice question if there are 5 choices?

(17) What is the probability of guessing the correct answer to a true-false question?

(18) What is the probability that your birthday will fall on Saturday or Sunday?

(19) What is the probability of winning a raffle if 500 tickets are sold and you buy 5 of them?

(20) A class of 25 students has 15 girls and 10 boys. If one student is chosen at random, what is the probability it is a girl?

(21) There are 26 letters in the alphabet. What is the probability that a letter chosen at random is in the word MATHEMATICS?

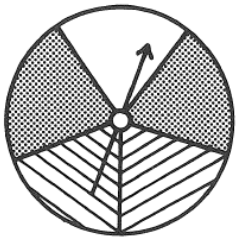
5	1	18	8	3	14	6	17	13	10	15	20	4	11	7	16	21	12	19	2	9

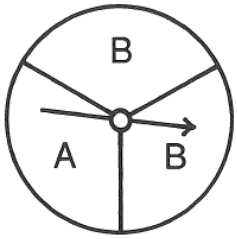
Objective: Probability – Independent Events

What Do the Police Put On a Bad Pig?

Cross out the box containing each correct answer. (If an answer appears more than once, it doesn't matter which one you cross out.) When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

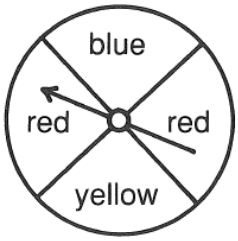
I. Find each probability if you spin both spinners.

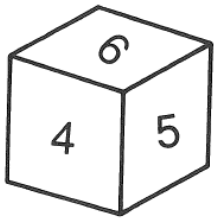




(1) P(white, A)
(2) P(white, B)
(3) P(striped, A)
(4) P(striped, B)
(5) P(not striped, A)
(6) P(not striped, B)
(7) P(not white, A)
(8) P(not white, B)

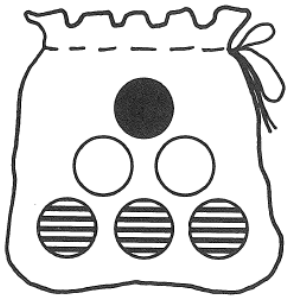
II. Find each probability if you spin the spinner and roll the number cube.





(9) P(blue, 2)
(10) P(blue, not 2)
(11) P(yellow, even)
(12) P(red, even)
(13) P(not blue, 5)
(14) P(not blue, odd)
(15) P(red, 4)
(16) P(red, not 4)

III. Find each probability if you pick one marble, replace it, then pick a second marble.



(17) P(black, white)
(18) P(black, striped)
(19) P(white, striped)
(20) P(not white, striped)
(21) P(black, black)
(22) P(striped, striped)
(23) P(white, not white)
(24) P(not white, not white)

IV. Solve.

(25) A test has two multiple choice questions, each with five choices. What is the probability of guessing the correct answer to both questions?

(26) One letter is randomly selected from the word *MATH*, and a second letter is randomly selected from the word *JOKES*. What is the probability that both letters are vowels?

A	T	T	N	O	H	E	E	A	T	P	P	I	M	G	C	O
$\frac{1}{3}$	$\frac{1}{4}$	$\frac{1}{4}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{7}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{9}$	$\frac{1}{10}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{15}$	$\frac{1}{16}$	$\frac{1}{18}$	$\frac{1}{20}$	$\frac{1}{24}$
T	H	O	U	G	S	S	L	F	A	E	E	F	A	T	S	E
$\frac{1}{25}$	$\frac{1}{36}$	$\frac{2}{5}$	$\frac{2}{7}$	$\frac{2}{9}$	$\frac{2}{15}$	$\frac{2}{15}$	$\frac{3}{8}$	$\frac{3}{10}$	$\frac{4}{9}$	$\frac{4}{15}$	$\frac{4}{15}$	$\frac{5}{8}$	$\frac{5}{12}$	$\frac{5}{24}$	$\frac{7}{15}$	$\frac{8}{15}$

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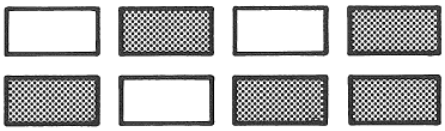
Objective: Probability – Dependent Events

What Do You Get if a Bunch of Bad Guys Fall in the Ocean?

Cross out the box containing each correct answer. (If an answer appears more than once, it doesn't matter which one you cross out.) When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

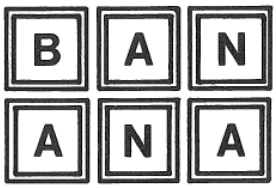
I. Find each probability if you pick a card, do *not* replace it, then pick a second card.



(1) P(black, then white) (2) P(black, then black)

(3) P(white, then black) (4) P(white, then white)

II. Each letter of the word *BANANA* is written on a card. Find each probability if you pick two cards without replacing the first.

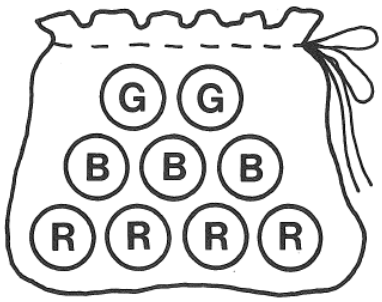


(5) P(B, then N) (6) P(B, then A) (7) P(N, then B)

(8) P(N, then A) (9) P(A, then B) (10) P(A, then N)

(11) P(N, then N) (12) P(A, then A) (13) P(B, then B)

III. Find each probability if you pick a marble, do not replace it, then pick a second marble. (R = red; B = blue; G = green)



(14) P(blue, then green) (15) P(green, then red)

(16) P(green, then green) (17) P(green, then not green)

(18) P(red, then blue) (19) P(red, then not blue)

(20) P(blue, then blue) (21) P(not blue, then not blue)

IV. Solve.

(22) There were 6 purple socks and 4 orange socks in a drawer. Zucky picked one sock without looking and then another without looking (or replacing the first). What is the probability that he picked 2 purple socks?

(23) There are 10 boxes in a grab bag. The boxes are identical except that 7 of them contain $20 bills. A contest winner gets to pick two boxes from the grab bag. What is the probability of getting two $20 bills?

TH	AN	IT	IT	IT	PL	AC	ES	EY	EY	ON	ON	RI	DE
0	$\frac{1}{3}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{5}$	$\frac{1}{6}$	$\frac{1}{8}$	$\frac{1}{9}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{12}$	$\frac{1}{12}$	$\frac{1}{14}$	$\frac{1}{15}$
DE	DE	SO	ME	ET	WA	TE	AM	LL	RS	VE	RY	ST	ST
$\frac{1}{15}$	$\frac{1}{15}$	$\frac{1}{36}$	$\frac{2}{5}$	$\frac{3}{28}$	$\frac{4}{9}$	$\frac{5}{12}$	$\frac{5}{14}$	$\frac{5}{18}$	$\frac{7}{15}$	$\frac{7}{18}$	$\frac{7}{36}$	$\frac{15}{56}$	$\frac{15}{56}$

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Objective: Statistics

The mean, median, and mode are **measures of central tendency**.

- To calculate the mean of a set of data, find the average.
- To find the median of a set of data, order the data and find the middle number.
- The mode is the data that occurs most often. It is possible to have no mode or more than one mode.

The range and interquartile range are **measures of variation**.

- The range is the *difference* between the highest and lowest values in the data set.

> The **lower quartile** or LQ is the median of the lower half of a set of data. The **upper quartile** or UQ is the median of the upper half of a set of data. The **interquartile range** is the difference between the upper quartile and the lower quartile.

Example 1 **Find the range, median, upper and lower quartiles, and interquartile range for the following set of data.**
13, 20, 18, 12, 21, 2, 18, 17, 15, 10, 14

The greatest number in the data set is 21. The least number is 2. The range is 21 − 2 or 19.

To find the quartiles, arrange the numbers in order from least to greatest.
2 10 12 13 14 15 17 18 18 20 21

The median is 15. The numbers below 15 are 2, 10, 12, 13, and 14. The median of the numbers below 15 is 12, so the lower quartile is 12. The numbers above 15 are 17, 18, 18, 20, and 21. The median of the numbers above 15 is 18, so the upper quartile is 18. The interquartile range is 18 − 12 or 6.

Find the mean, median, mode, and range for the set of data: 3, 8, 2, 9, 10, 4, 6, 12, 15

_____ 1) mean

_____ 2) median

_____ 3) mode

_____ 4) range

Find the range, median, upper and lower quartiles, and interquartile range for each set of data.

5. 14, 16, 18, 24, 19, 15, 13
   _____ range
   _____ median
   _____ upper quartile
   _____ lower quartile
   _____ interquartile range

6. 91, 92, 88, 89, 93, 95, 65, 85, 91
   _____ range
   _____ median
   _____ upper quartile
   _____ lower quartile
   _____ interquartile range

Which measure of central tendency would you use to find:

_____ 7) the middle-most salary of teachers working in Fort Bend ISD?

_____ 8) the radio station your friends like the best?

_____ 9) your favorite baseball player's batting average?

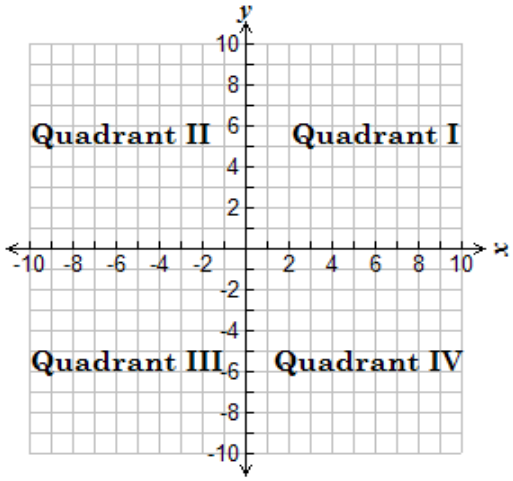
Glencoe 8th grade math online textbook – reference Chapter 9, sections 4 and 5.

Objective: Geometry, The Coordinate Plane

The **coordinate plane** is used to locate points. The horizontal number line is the ***x*-axis**. The vertical number line is the ***y*-axis**. Their intersection is the **origin**.

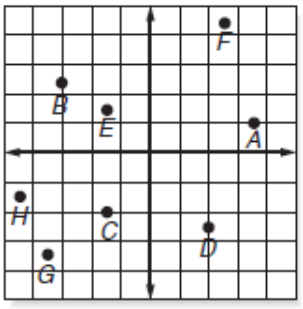
Points are located using **ordered pairs**. The first number in an ordered pair is the ***x*-coordinate**; the second number is the ***y*-coordinate**.

The coordinate plane is separated into four sections called **quadrants**.



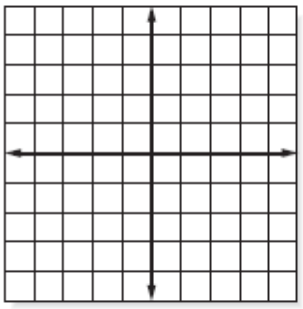
Name the ordered pair for each point. Then identify the Quadrant in which it is located. Each gridline on the graph is one unit.

1. A
2. B
3. C
4. D
5. E
6. F
7. G
8. H



Graph and label each point.

9. $J\left(2\frac{1}{4}, \frac{1}{2}\right)$
10. $K\left(3, -1\frac{2}{3}\right)$
11. $M\left(-3\frac{3}{4}, 4\frac{1}{4}\right)$
12. $N\left(-3\frac{2}{5}, -2\frac{3}{5}\right)$
13. $P\left(-2.1, 1.8\right)$
14. $Q\left(1.75, -3.5\right)$



Objective: Geometry, Transformations

A **transformation** is a mapping of a geometric figure. Transformations include dilations, reflections, and translations. (Rotations will be taught in high school geometry classes.) The original figure (before the transformation is performed) is called the *pre-image*. The new figure is called the *image*. If the vertex of the pre-image is point *A*, the vertex of the image is called *A*' (read *A* prime.)

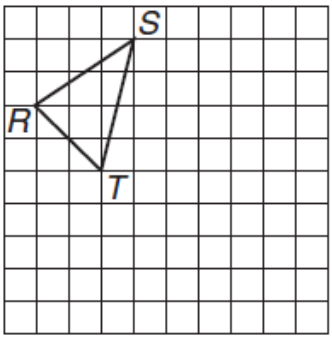
Translations When a figure is translated, every point is moved the same distance and in the same direction. The translated image is congruent to the pre-image and has the same orientation. A translation is sometimes called a slide because it looks like you simply slide the pre-image over to create the image.

Reflections To perform a reflection: For each vertex, count the number of units between the vertex and the line of symmetry. Count the same number of units between the vertex and the line of symmetry but on the other side of the line of symmetry and mark the new points.

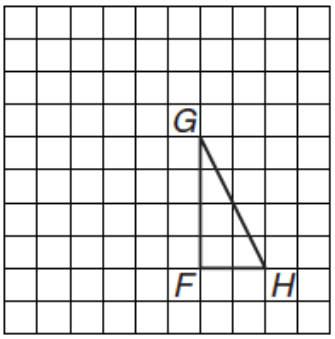
Dilations To perform a dilation, multiply each *x* and *y* value of each point by the scale factor. If the image is larger than the pre-image, the dilation is called an *enlargement*. If the image is smaller than the pre-image, the dilation is called a *reduction*.

Draw the image of the figure after the indicated translation.

1. 5 units right and 4 units down

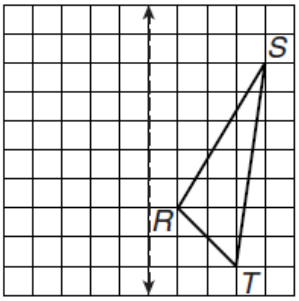


2. 3 units left and 2 units up

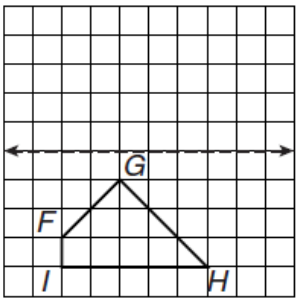


Draw the image of the figure after a reflection over the given line.

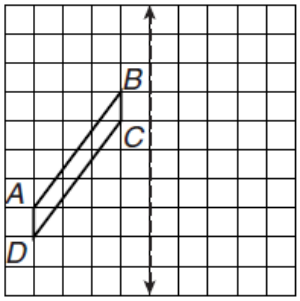
3.



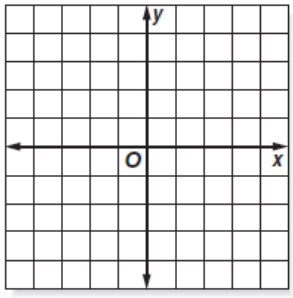
4.



5.



6. Polygon *ABCD* has vertices *A*(2, 4), *B*(−1, 5), *C*(−3, −5), and *D*(3, −4). Find the coordinates of its image after a dilation with a scale factor of $\frac{1}{2}$. Then graph polygon *ABCD* and its dilation.



Objective: Geometry and Measurement
A formula chart can be found on at the following link below and clicking on Grade 8 Reference Materials *or* Algebra I Reference Materials. http://www.tea.state.tx.us/student.assessment/staar/math/

Sketch the net of each 3-D figure. Shade the base(s).

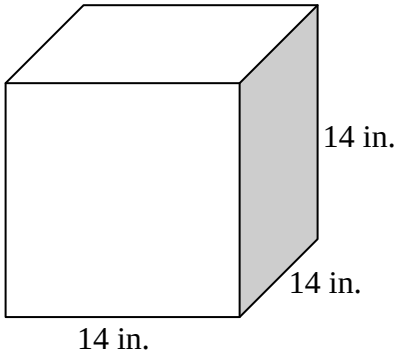
1) Cube

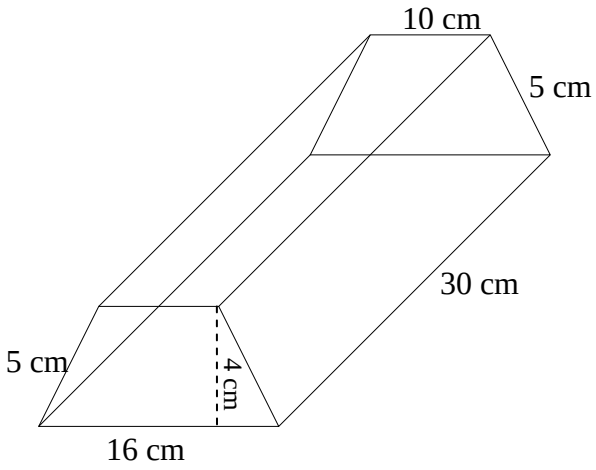
2) square pyramid

3) cylinder

4) triangular prism

Find the surface area and volume for each figure. Be sure to label the units on all answers. Show your work on a separate sheet of notebook paper. Include the formulas you used.





_____ 5) surface area

_____ 6) volume

_____ 7) surface area

_____ 8) volume

_____ 9) What is the total surface area of a cylindrical tank with radius of 7 feet and height of 15 feet? (Use $\pi = \frac{22}{7}$)

_____ 10) Find the volume of a cone with d = 8 feet and h = 14 feet. (Use $\pi \approx 3.14$) Round the answer to the nearest tenths place.

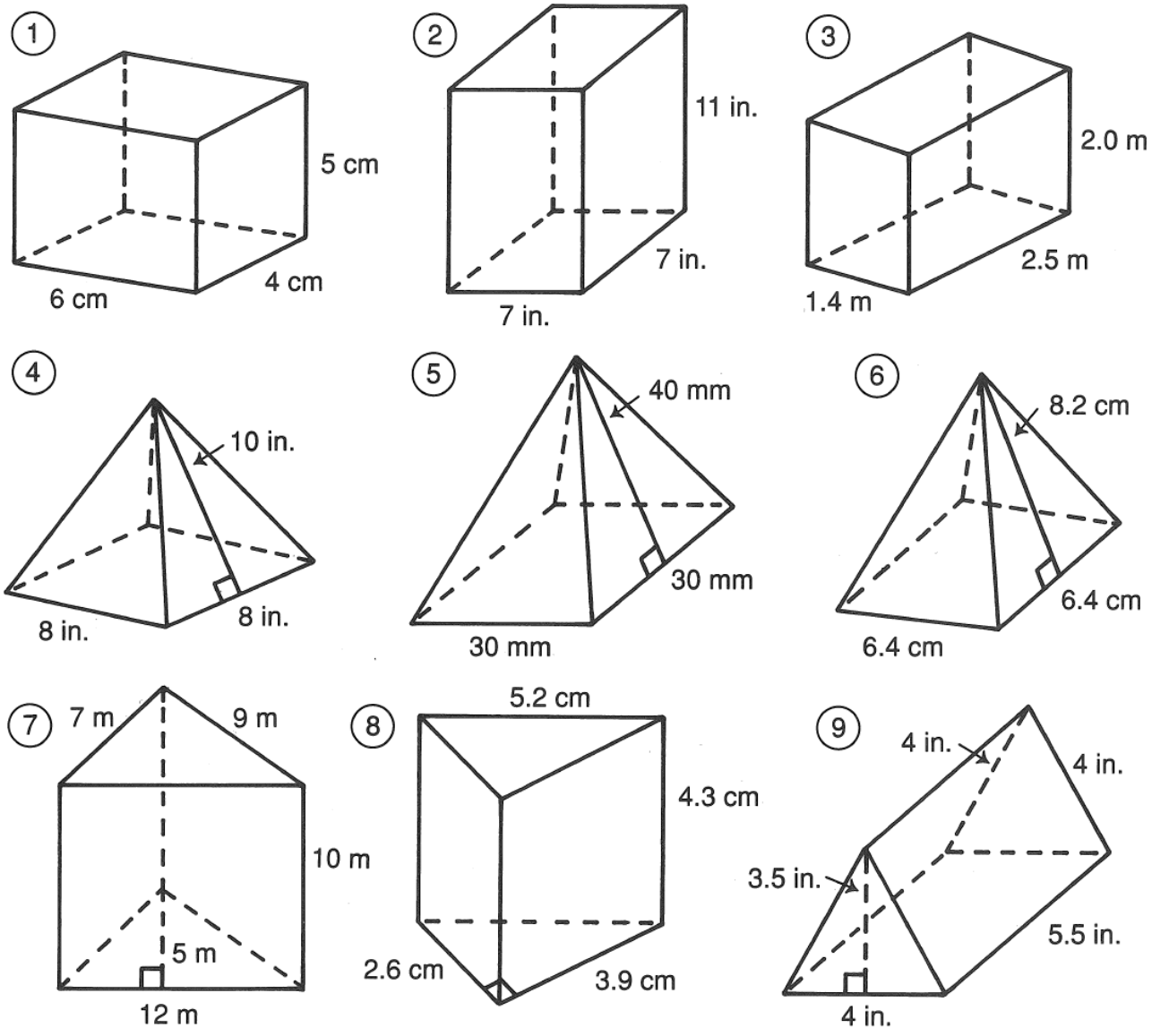
_____ 11) Find the volume of a square pyramid. The edge of the square is 1.5 cm, and the height of the pyramid is 4 cm.

12) Explain the difference between total surface area and lateral surface area.

Objective: Geometry and Measurement – Surface Area (Prisms and Pyramids)

What Is Cold And Comes In Cans?

Find the surface area of each figure. Cross out the box containing each correct answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.



MU	RI	CH	OW	OP	FO	IL
340 m^2	224 $in.^2$	3,120 mm^2	148 cm^2	80 $in.^2$	3,300 mm^2	118 $in.^2$
IB	AR	CL	EA	CA	NS	KE
81.5 cm^2	22.6 m^2	60.45 cm^2	312 m^2	145.92 cm^2	25.8 m^2	406 $in.^2$

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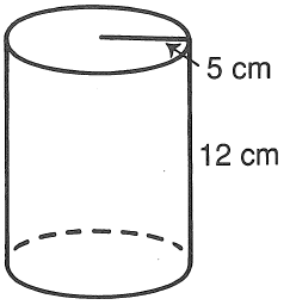
Objective: Geometry and Measurement – Surface Area (Cylinders)

Why Did Humpty Dumpty Have a Great Fall?

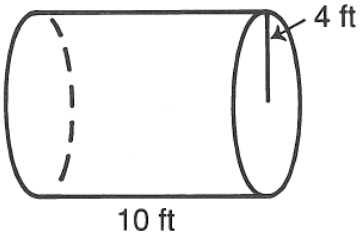
Do each exercise and find your answer in the answer column. Write the letter of the answer in each box containing the number of the exercise. Use 3.14 for π.

I. Find the lateral area and the total surface area of each cylinder.



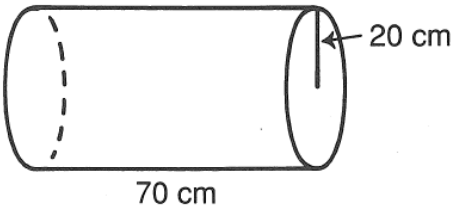
(1) lateral area: _____

(2) total area: _____



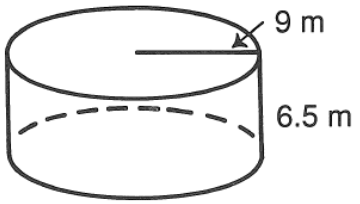
(3) lateral area: _____

(4) total area: _____



(5) lateral area: _____

(6) total area: _____



(7) lateral area: _____

(8) total area: _____

II. Find the total surface area of each cylinder.

(9) $r = 3$ cm, $h = 10$ cm

(10) $r = 8$ in., $h = 8$ in.

(11) $d = 10.8$ m, $h = 2.6$ m

III. Solve.

(12) A can of tomato juice is a cylinder with a radius of 7.5 cm and a height of 20 cm. What is the area of the label around the can?

(13) A steel oil tank is a cylinder with a diameter of 12 ft and a height of 18 ft. How many square feet of steel were needed to make the tank?

(Y) 412.18 ft^2

(R) 803.84 $in.^2$

(H) 792.16 m^2

(T) 251.2 ft^2

(M) 904.32 ft^2

(L) 861.6 cm^2

(S) 367.38 m^2

(D) 376.8 cm^2

(P) 244.92 cm^2

(C) 815.18 ft^2

(K) 11,304 cm^2

(B) 942 cm^2

(E) 351.68 ft^2

(N) 775.14 $in.^2$

(U) 533.8 cm^2

(A) 271.296 m^2

(O) 876.06 m^2

(V) 12,412 cm^2

(F) 8,792 cm^2

(I) 311.046 m^2

3	8	13	11	6	4	2	9	5	8	10	11	12	11	1	7	2	13	13	4	10

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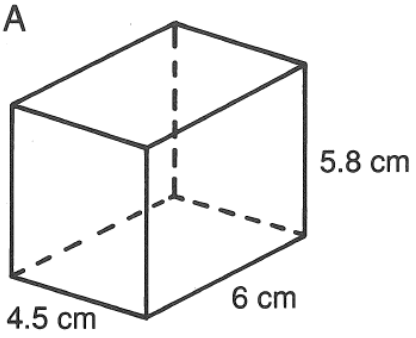
Objective: Geometry and Measurement – Volume (Prisms)

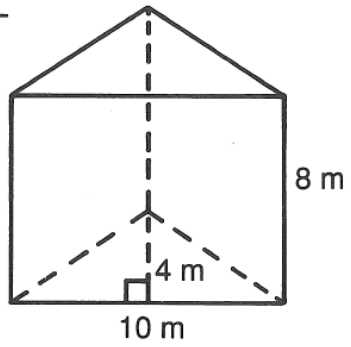
What Is Big, Gray, and Lives in California?

Find the volume of each prism. Write the letter of the exercise in the box above the answer at the bottom of the page.

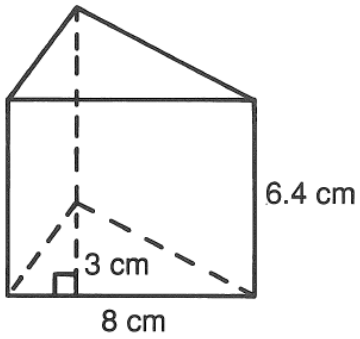
A



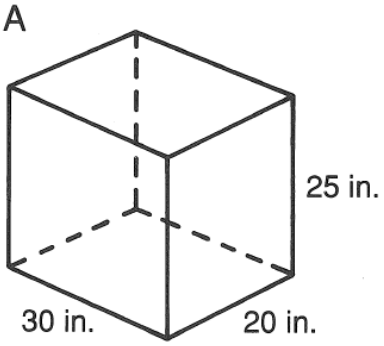
T



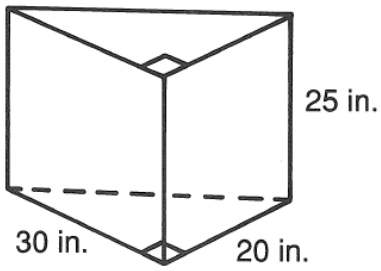
N



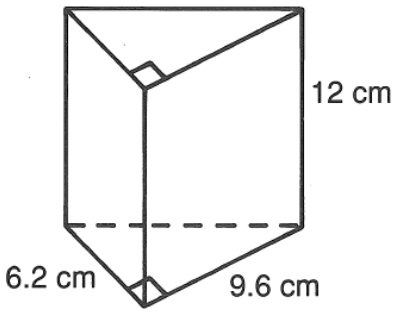
A



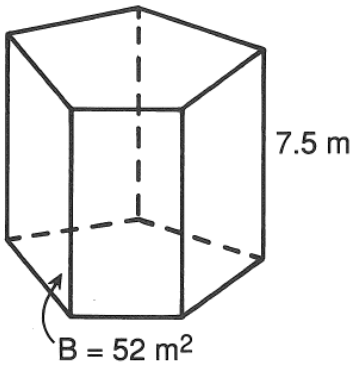
P



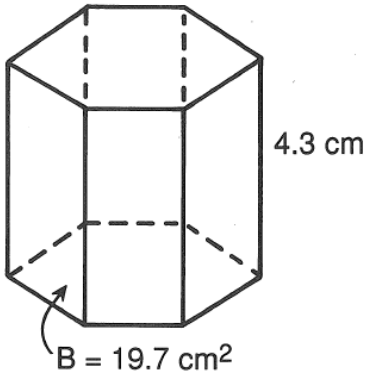
A



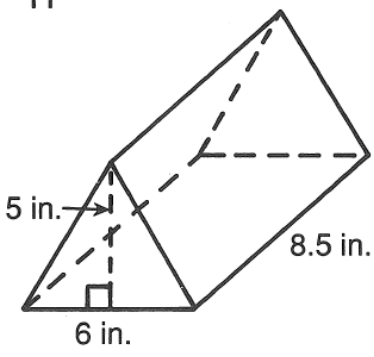
N



L



H



83.8 cm³ | 357.12 cm³ | 76.8 cm³ | 8,800 in.³ | 92.31 cm³ | 84.71 cm³ | 156.6 cm³ | 114.5 in.³ | 364.5 m³ | 7,500 in.³ | 127.5 in.³ | 15,000 in.³ | 390 m³ | 160 m³ | 349.22 cm³

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Objective: Geometry and Measurement – Volume (Cylinders)

☆ TRIVIA TEST ☆

1. What Is the Best Way to Paint a Rabbit?

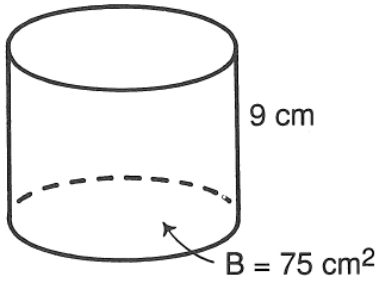
2. What Candy Do Kids Eat on the Playground?

4	7	2	8	8	3	11	5	10	1	11	3	6
11	5	9	5	10	10	1	7	5	9	5	10	

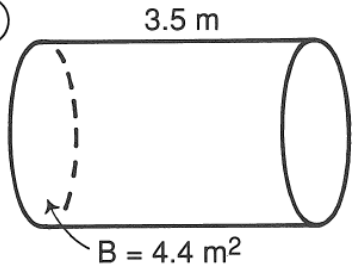
Do each exercise and find your answer in the answer column. Write the letter of the answer above the exercise number each time it appears in the code. Use 3.14 for π.

I. Find the volume of each cylinder.

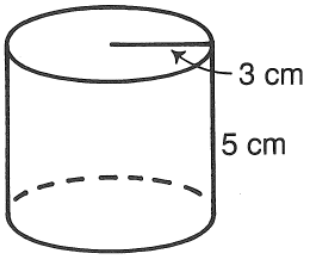
(1)



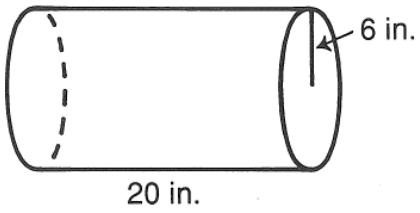
(2)



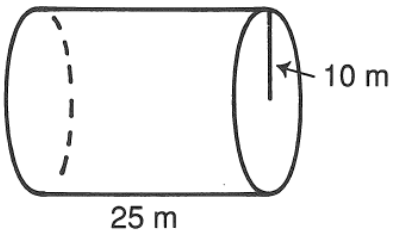
(3)



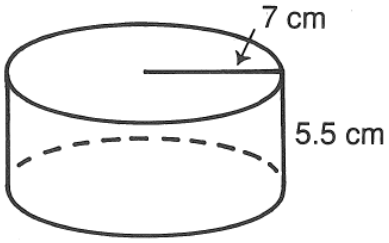
(4)



(5)



(6)



(7) $r = 8$ in.
$h = 3$ in.

(8) $r = 2.5$ mm
$h = 60$ mm

(9) $d = 10$ m
$h = 7.2$ m

Answers

(M) 814.13 cm^3
(C) 565.2 m^3
(N) 381.36 mL
(A) 141.3 cm^3
(B) 14.8 m^3
(I) 602.88 $in.^3$
(P) 675 cm^3
(U) 7,490 m^3
(H) 1,177.5 mm^3
(R) 452.16 mL
(W) 2,260.8 $in.^3$
(L) 382.8 cm^3
(T) 15.4 m^3
(Y) 846.23 cm^3
(O) 717.8 $in.^3$
(S) 376.8 cm^3
(G) 1,224.5 mm^3
(E) 7,850 m^3
(D) 614.2 m^3

II. Solve.

(10) Shawn is making a candle using a cylindrical mold with a radius of 2 cm and a height of 30 cm. How many cubic centimeters of wax are needed for the candle?

(11) A mug in the shape of a cylinder has a base with a radius of 4 cm. How many milliliters of liquid does it hold if filled to a height of 9 cm?
(Hint: 1 cm^3 holds 1 mL.)

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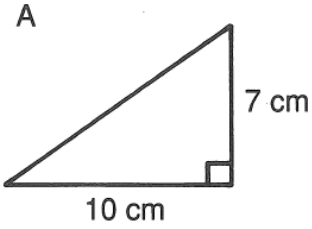
Objective:
Pythagorean Theorem (solve for hypotenuse) ***Use a calculator to approximate the square roots.***

How Would You Describe a Dead Skunk?

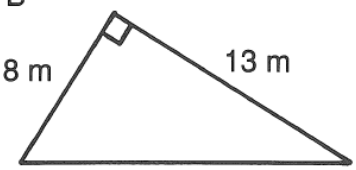
Round each answer to the nearest tenth (if necessary). Find each answer at the bottom of the page and cross out the letter above it. When you finish, the answer to the title question will remain.

(1) Find the length of the hypotenuse of each right triangle.

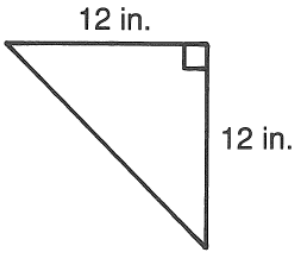
A



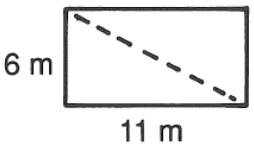
B



C

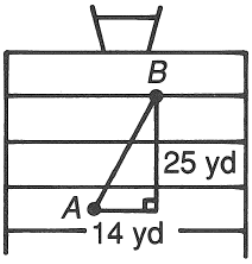


(2) A rectangle is 6 m wide and 11m long. How long is the diagonal of the rectangle?



(3) A television screen may be described in terms of the diagonal measure of its screen. If a TV screen is 20 in. wide and 15 in. high, what is the length of its diagonal?

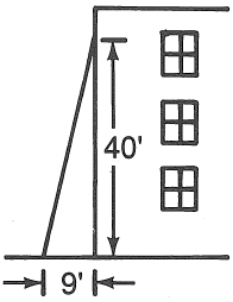
(4) A quarterback at point *A* throws the football to a receiver who catches it at point *B*. How long was the pass?



(5) A rope is stretched from the top of a 7-foot tent pole to a point on the ground 12 ft from the base of the pole. How long is the rope?

(6) Kristin and her family left their campsite for a hike. They hiked 5 mi west and then 2 mi north. How far were they from the campsite?

(7) The window of a burning building is 40 feet above the ground. The base of a ladder is placed 9 feet from the building. How long must the ladder be to reach the window?



(8) The bases on a baseball diamond are 90 feet apart. How far is it from home plate to second base?

(9) The lawn in front of Pythagoras Jr. High is in the shape of a rectangle 24 m long and 10 m wide. How many meters shorter is your walk if you walk diagonally across the lawn rather than along two sides of it?

D	E	S	A	X	D	T	N	O	I	S	N	T	A	C	K	T	E
5.4 mi	29.3 yd	15.3 m	8 m	13.2 m	12.5 m	16.7 in.	41 ft	12.2 cm	6.1 mi	13.9 ft	42.5 ft	127.3 ft	28.7 yd	14.4 ft	17.0 in.	129.8 ft	25 in.

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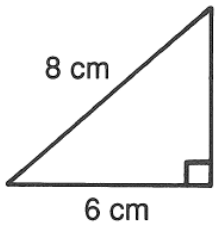
Objective: The Pythagorean Theorem ***Use a calculator to approximate the square roots.***

What Relation Is a Doorstep to a Doormat?

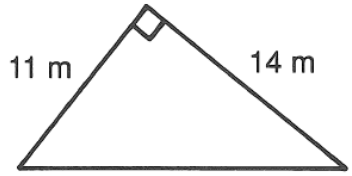
Round each answer to the nearest tenth (if necessary). Cross out the box containing each answer. When you finish, write the letters from the remaining boxes in the spaces at the bottom of the page.

(1) For each right triangle, find the length of the side that is not given.

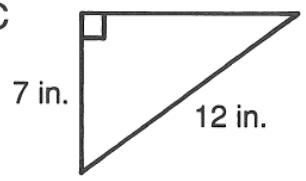
A



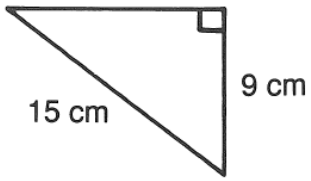
B



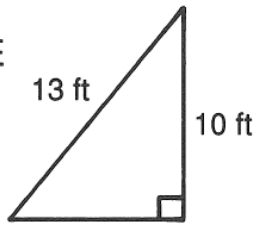
C



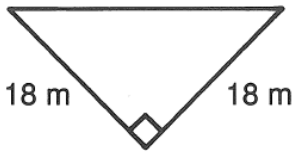
D



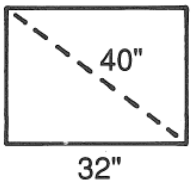
E



F

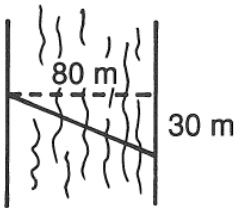


(2) Yuki just bought a big-screen TV set. The screen has a diagonal measure of 40 in. If the screen is 32 in. wide, how high is it?



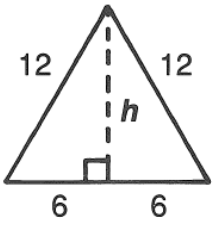
(3) A 25-foot ladder is leaned against a wall. If the base of the ladder is 7 ft from the wall, how high up the wall will the ladder reach?

(4) As Greg swam across an 80-meter river, the current carried him 30 m downstream. How far did he swim?



(5) The mast of a sailing ship is 20 ft tall. A rope is stretched 26 ft from the top of the mast to a cleat on the deck of the ship. How far is the cleat from the base of the mast?

(6) Each side of an equilateral triangle measures 12 cm. Find the height, ***h***, of the triangle.



(7) Two jets left an airport at the same time. One traveled east at 300 miles per hour. The other traveled south at 400 miles per hour. How far apart were the jets at the end of an hour?

PL 85.4 m	DO 12 cm	AS 9.8 cm	OR 24 in.	MA 500 mi	TE 26 in.	AM 5.3 cm	RU 10.4 cm	PF 520 mi
ON 25.5 in.	AR 9.4 in.	UN 17.8 m	PA 16.6 ft	TH 87.1 m	IN 9.7 in.	AT 24 ft	ER 18.5 ft	AN 8.3 ft

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Online Textbook

Set up your online textbook!

Write your Username here: _____ Use the first 3 letters of your last name and first 3 letters of your first name. For example, Stephanie Collins would be COLSTE.
Password: Use your 6 digit "lunch number"

Go to http://mrscollinsmath.weebly.com and hover your mouse over the Algebra tab.
Click Links.
Scroll down to Algebra Textbook Resources and follow the directions carefully.

_____ My online textbook is set up and working. (Initial the blank when complete) Write your username and password in place that you will remember if you used something other than the suggestion above.

Practice Test

Now that you have finished the practice problems in this packet, complete this practice test using only pencil, paper, and your math formula chart, if needed. Record your start and finish times, but do not rush. Feel free to take as much time as you need.

Start Time: _____

1. What is the value of $3.2n$ when $n = 5$?
   A) 0.16 B) 1.6 C) 16 D) 161

2. What is the value of 5^4?
   A) 20 B) 54 C) 625 D) 1024

3. Let d be the number of dollars you spent on gas and g be the number of gallons you purchased. Which expression represents the price you paid per gallon?
   A) $d + g$ B) $\frac{g}{d}$ C) dg D) $\frac{d}{g}$

4. What is the value of $3[1^2(5 - 3 + 1)^3 \div 9]$?
   A) $\frac{1}{3}$ B) 9 C) 18 D) 6

5. What is the value of $\frac{108}{x^2} + 4x$ when $x = 6$?
   A) 27 B) 33 C) 42 D) 55

6. Which expression represents the phrase "twice the quotient of 5 less than a number m and 6"?
   A) $2\left(\frac{5-m}{6}\right)$ B) $2\left(\frac{m-5}{6}\right)$ C) $\frac{2m-5}{6}$ D) $\frac{2(5)-m}{6}$

7. What is the solution to the equation $\frac{x}{4} - 12 = -4$?

8. If $-\frac{4}{5}x = 1$, what is the value of x?

9. Which expression is a perfect square if $x = 81$?

A) $2 \cdot \sqrt{x} + 31$ B) $\sqrt{x} + 3 \cdot 3$ C) $9 - 5\sqrt{x}$ D) $2 + 6\sqrt{x}$

10. What is the value of $\frac{5(2x-6)}{x}$ when $x = -2$?

11. Which list of numbers is in order from least to greatest?

A) –0.8, $-\frac{5}{6}$, $\frac{8}{9}$, 1.41, $\sqrt{2}$

B) $\sqrt{2}$, 1.41, $\frac{8}{9}$, –0.8, $-\frac{5}{6}$

C) $-\frac{5}{6}$, –0.8, $\frac{8}{9}$, 1.41, $\sqrt{2}$

D) $\sqrt{2}$, $-\frac{5}{6}$, –0.8, $\frac{8}{9}$, 1.41

E) $-\frac{5}{6}$, –0.8, $\frac{8}{9}$, $\sqrt{2}$, 1.41

12. What is the value of –3.1 + 8.8 + (-2.6)?

A) -14.5 B) 3.1 C) 8.3 D) 9.3 E) 13.4

13. What is the value of the expression $x – 2.8 – (–y)$ when $x = 4.5$ and $y = –6.1$?

A) –4.4 B) –1.2 C) 1.2 D) 7.8 E) 13.4

14. You drive from Denver, Colorado which has an elevation of 5280 feet above sea level to Death Valley, California which has an elevation of 282 feet below sea level. What is the change in elevation?

A) –5562 ft B) –4998 ft C) 4998 ft D) 5280 ft E) 5562 ft

15. Let a be a positive number. If the product abc is negative, which statement must be true?

A) $bc > 0$ B) $bc < 0$ C) $ac > 0$ D) $ac < 0$ E) $ab > 0$

16. If $x = 64$, the value of which expression is a perfect square?

A) $\sqrt{x} + 5$ B) $\sqrt{x} - 2$ C) $2 \cdot \sqrt{x}$ D) $4 \cdot \sqrt{x}$ E) $2\sqrt{x} + 1$

17. The area of a square mirror is 1024 square inches. What is the perimeter of the mirror?

18. What is the value of $ab - |a| + b^2$ when $a = –1.5$ and $b = 4$?

19. The table shows the depth of the water at the end of a dock in Myrtle Beach, South Carolina over a five hour period. What is the mean depth of the water over the five-hour period?

Hour	Depth (ft)
1	0.1
2	–0.2
3	–0.2
4	0.3
5	1.0

20. What is the first step in solving the equation, $5 + \frac{12}{x} = -1$?

A) Add 1 to each side
B) Divide each side by 12
C) Subtract 5 from each side
D) Add 5 to each side

Finish Time: _____