

Review: Number Systems

Divisibility

Prime/Composite

Properties

Factors/Multiples

Prime Factorization

GCF/LCM

Decimals

Coordinate Graphing

Fractions

Integers

DIVISIBILITY

A number is divisible by...

2	If the last digit is even (ends in a 0,2,4,6, or 8)	EX) 3,978
3	If the sum of the digits is divisible by 3	EX) 315
4	If the last two digits form a number divisible by 4	EX) 8,512
5	If the last digit is a 0 or 5.	EX) 1830
6	If the number is divisible by 2 and 3. <i>(the sum of the digits is divisible by 3 and it is even)</i>	EX) 48
9	If the sum of the digits is divisible by 9.	EX) 711
10	If the last digit is 0.	EX) 15,900

Using the divisibility rules, determine whether the number is divisible by 2, 3, 4, 5, 6, 8, 9 or 10.

Check each box that the given.

	2	3	4	5	6	9	10
1) 45,936							
2) 42,984							
3) 74,158,327,640							
4) 8,640							

What is a COMPOSITE NUMBER??? A number divisible by more than two numbers.

(more than 2 factors!!!) EX) 4 is composite because you can multiple 1×4 and 2×2 to equal 4.

What is a PRIME NUMBER??? A number divisible by ONLY the number 1 and itself

(only 2 factors!!) EX) 3 is prime because the only thing you can multiply to equal 3 is 1×3

Practice: Tell whether each number is prime or composite:

5) 29 _____

8) 1 _____

6) 81 _____

9) 27 _____

7) 39 _____

10) 2 _____

PROPERTIES

Associative Property- Grouping - changing the grouping of numbers does not change the sum/product.

Commutative Property- Order- changing the order does not change the sum/product.

Additive Identity Property- the identity element of addition is ZERO because any number ADDED to zero will always be itself.

Multiplicative Identity Property- the identity element of multiplication is ONE because any number MULTIPLIED by one will always be itself.

Additive Inverse Property- A number added to its inverse to ALWAYS equal zero.

Multiplicative Inverse Property- A number multiplied by its inverse to ALWAYS equal ONE.

Distributive Property - The distributive property is when you multiply a number times a sum

Identify the property shown:

- | | |
|---|------------------------------|
| 1) $B(C \cdot D) = (B \cdot C) \cdot D$ _____ | 4) $0 + 7.13 = 7.13$ _____ |
| 2) $6(2 + 4) = 6(2) + 6(4)$ _____ | 5) $145 \cdot 1 = 145$ _____ |
| 3) $4 + -4 = 0$ _____ | 6) $x+y+z = z+x+y$ _____ |

Match the examples on the left with the correct property on the right.

- | | |
|--|---|
| a. $8(5) = 5(8)$ | 1. Associative Property of Multiplication |
| b. $a \cdot (b \cdot c) = (a \cdot b) \cdot c$ | 2. Commutative Property of Multiplication |
| c. $24 + (88 + 16) = (24 + 88) + 16$ | 3. Associative Property of Addition |
| d. $13 + 67 = 67 + 13$ | 4. Commutative Property of Addition |

Simplify:

- | | | |
|---------------|----------------------------|--------------------------|
| A) $4(5 + x)$ | B) $3(x + y) + 7(2x + 3y)$ | C) $4(x + 2) + 5(x + 3)$ |
|---------------|----------------------------|--------------------------|

EXPONENTS

Exponents: The exponent tells us how many times we have to multiply the base by itself.

For Example: 3^4 means: $3 \times 3 \times 3 \times 3 = 81$

Write each expression in exponential form.

- | | | |
|--|--------------------------------------|------------------------------|
| 1. $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$ _____ | 2. $7 \cdot 7 \cdot 7 \cdot 7$ _____ | 3. $g \cdot g \cdot g$ _____ |
|--|--------------------------------------|------------------------------|

Find each value.

- | | | |
|-----------------|----------------|----------------|
| 4. 10^5 _____ | 5. 5^4 _____ | 6. 3^3 _____ |
| 7. 8^2 _____ | 8. z^0 _____ | 9. 4^3 _____ |

PRIME FACTORIZATION

Prime Factorization: Rewriting a number to show the product of all of its prime factors.

"L Method"

Example:

$$\begin{array}{r|l} 2 & 36 \\ 2 & 18 \\ 3 & 9 \\ 3 & 3 \\ & 1 \end{array}$$

Don't Forget: When you have all of the prime numbers to rewrite the problem Remember to put them in order from least to greatest.

Example: $2 \times 2 \times 3 \times 3$ or $2^2 \times 3^2$

Write the prime factorization of each number in exponential notation. Use the "L" Method.

1. 56

2. 72

3. 108

4. 51

Factors and Multiples

List all of the factors of each number.

5. 24: _____

6. 75: _____

List the first 5 multiples of each number.

7. 5: _____

8. 8: _____

GCF & LCM

GCF - Greatest Common Factor
"Just the Left"

LCM - Least Common Multiple
"Make an L"

Example:

$$\begin{array}{r|l} 2 & 32 \quad 20 \\ 2 & 16 \quad 10 \\ & 8 \quad 5 \end{array}$$

$2 \cdot 2 = 4 = \text{GCF}$

Example:

$$\begin{array}{r|l} 2 & 32 \quad 20 \\ 2 & 16 \quad 10 \\ & 8 \quad 5 \end{array}$$

$2 \cdot 2 \cdot 8 \cdot 5 = 160 = \text{LCM}$

Find the GCF AND LCM of each set of numbers-SHOW YOUR WORK!! Use the "L" Method.

1. 28 and 16

2. 24, 48, and 64

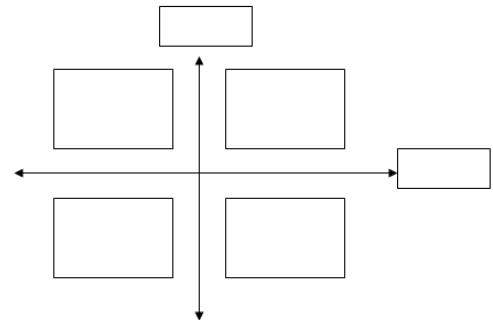
3. 6 and 20

4. 15, 6, and 4

GCF/LCM WORD PROBLEMS

5. Shanika and Jarvis are making bead bracelets to sell in a booth at the fair. They have 15 yellow beads, 30 blue beads, and 40 red beads. How many bracelets will they make if they want each bracelet to have the same number of beads?
6. Jason is filling grab bags for the school festival. Two hundred bags are lined up on a long table. He has already placed crackers and other food items in each bag and now has a limited amount of prizes to add to some of the bags. If he places prize A in every 8th bag, prize B in every 12th bag, and prize C in every 15th bag, which bag will have all three prizes?

COORDINATE GRAPHING



Name the quadrant that contains the point:

1. (-12, 7) _____ 2. (-14, -5) _____ 3. (14, 0) _____ 4. (7, -8) _____

5. The point where the x-axis and y-axis intersect is called the _____.

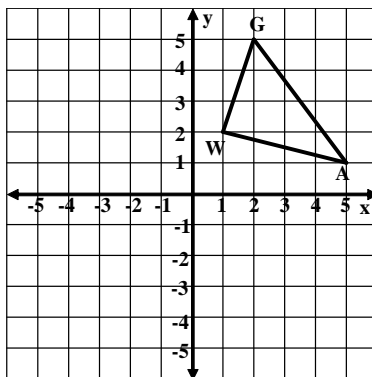
Reflection: The flip of a figure over the x-axis or y-axis

When reflecting across X-axis, X values stay same and Y values change signs

When reflecting across Y-axis, Y values stay same and X values change signs.

REMEMBER: "What I say, stays the same."

6. Draw the image formed by reflecting $\triangle WAG$ across the y-axis. Be sure to label the new image.



- W' _____
- A' _____
- G' _____

7. Give the coordinates of point A, (-8, -5), after it is reflected over the y-axis.° A' = _____
8. Give the coordinates of point X, (5, -2), after it is reflected over the x-axis.° X' = _____

DECIMALS

*Rounding

- Use the digit to the RIGHT
- If the digit is 0 to 4 to the floor
- If the digit is 5 or above give it a SHOVE
- Drop all of the digits after

*To compare or order

- Line up decimals
- Write vertically
- Use phantom zeros
- Think Money\$\$\$

Example:

Round 0.876 to the nearest hundredths = .88



Practice:

Round 1.23 to the nearest tenths =

Round 32.056 to the nearest hundredths =

Round 157.098 to the nearest tenths =

Round 5.752 to the nearest hundredths =

Compare using < , > , =

$0.86 \underline{\hspace{1cm}} .65$

$6.07 \underline{\hspace{1cm}} 6.7$

$1.038 \underline{\hspace{1cm}} .0038$

$3.248 \underline{\hspace{1cm}} 3.258$

$7.2 \underline{\hspace{1cm}} 7.9$

$5.24 \underline{\hspace{1cm}} 5.04$

Example: Order from

least to greatest: 0.3, 0.33, 0.03

greatest to least: .606, .06, .006

*When adding and subtracting decimals:

- Write the problem vertically lining up the decimals
- Fill in with "phantom zeros" to hold place values
- Add or subtract normally
- Bring the decimal straight down in your answer

EXAMPLE:

$11.71 - 8.6 =$

$$\begin{array}{r} 11.71 \\ -8.60 \\ \hline 3.11 \end{array}$$

Practice #1:

$45.6 - 8.73 =$

Practice #2:

$7.52 + 4.566 =$

Practice #3:

$9.7 - 4 =$

Practice #4:

$8.3 + 2.753 =$

***When multiplying decimals:**

- Write the problem vertically - do NOT line up decimals
- After you multiply normally, start at the far right of your answer and count the total number of decimal places in each factor. The total number of decimal places is the number you move the decimal in the answer.

<p>EXAMPLE: $3.6 \times .12$</p> $\begin{array}{r} 3.6 \quad 1 \text{ place} \\ \times .12 \quad 2 \text{ places} \\ \hline 72 \\ +360 \\ \hline .432 \quad 3 \text{ places} \end{array}$	<p>Practice #1: 3.25×4.8</p>	<p>Practice #2: 7×3.72</p>
--	--	--



***When dividing decimals by whole numbers:**

- Place the decimal point straight up in your answer
- Divide normally
- Add zeros after the decimal point in the dividend and continue dividing

<p>EXAMPLE $0.36 \div 12$</p> $\begin{array}{r} \underline{0.03} \\ 12 \overline{)0.36} \end{array}$ <p>Check 0.03</p> $\begin{array}{r} \underline{\times 12} \\ 0.36 \end{array}$	<p>Practice #1 $11.61 \div 3$</p>	<p>Practice #2 $38.17 \div 11$</p>
---	--	---

***When dividing decimals by decimals:**

- Remember whatever you do the outside you must do to the inside. Ex. If your divisor has two decimals, you must move the decimal two places to the right in the divisor and in the dividend.
- Place the decimal point straight up in your answer
- Divide normally
- Add zeros after the decimal point in the dividend and continue dividing

$\begin{array}{r} \underline{186.3} \\ 0.5 \overline{)93.15} \end{array}$ <p> </p> <p>move decimal one place value right.</p>	<p>Check: 186.3</p> $\begin{array}{r} \underline{\times 5} \\ 931.5 \end{array}$
---	---

<p>Practice #1: $48.6 \div 8.1$</p>	<p>Practice #2: $45.05 \div 2.5 =$</p>	<p>Practice #3: $79.95 \div 2.46 =$</p>
--	---	--

Fractions

Simplify: to reduce a fraction, divide both the numerator and denominator by their GCF.

1.) $\frac{8}{10}$	2.) $\frac{25}{60}$	3.) $\frac{5}{1}$	4.) $\frac{9}{12}$	5.) $\frac{9}{21}$
--------------------	---------------------	-------------------	--------------------	--------------------

Equivalent: two fractions that represent the same amount.

(multiply or divide BOTH numerator and denominator by the same number)

1.) $\frac{3}{5} = \frac{?}{40}$	2.) $\frac{8}{32} = \frac{?}{8}$	3.) $\frac{5}{9} = \frac{15}{?}$	4.) $\frac{8}{32} = \frac{?}{4}$	5.) $\frac{5}{12} = \frac{20}{?}$
----------------------------------	----------------------------------	----------------------------------	----------------------------------	-----------------------------------

Compare/Order:

1) convert to decimals

2) find LCM and rename fractions using LCM

3) cross multiply

1.) $\frac{9}{12} \bigcirc \frac{3}{4}$	2.) $\frac{4}{9} \bigcirc \frac{2}{6}$	3.) $3\frac{3}{7} \bigcirc 3\frac{2}{5}$	4.) $6\frac{11}{4} \bigcirc 8\frac{7}{8}$
---	--	--	---

Put the following in order from least to greatest. (USE ORIGINAL FRACTIONS IN ANSWERS).

1.) $\frac{2}{6}, \frac{3}{10}, \frac{17}{15}, \frac{2}{3}$	2.) $\frac{5}{8}, \frac{6}{10}, \frac{4}{5}, \frac{3}{20}$
---	--

Put the following in order from greatest to least. (USE ORIGINAL FRACTIONS IN ANSWERS).

3.) $\frac{5}{4}, \frac{12}{10}, \frac{20}{30}, \frac{4}{3}$	4.) $\frac{7}{12}, \frac{11}{18}, \frac{16}{36}, \frac{5}{9}$
--	---

MIXED/IMPROPER

Writing Mixed Numbers as Improper Fractions

- 1) Multiply the denominator of the fraction by the whole number.
- 2) Then add the numerator to that product.
- 3) The result of the sum is the numerator of the improper fraction.
- 4) The denominator remains the same.

$$3\frac{5}{6} = \frac{23}{6}$$

1.) $5\frac{4}{7}$	2.) $11\frac{2}{3}$	3.) $3\frac{1}{4}$	4.) $7\frac{2}{3}$
--------------------	---------------------	--------------------	--------------------

$$4 \overline{)15} \quad \frac{15}{4} \leftarrow \text{STOP DIVIDING without using decimals.}$$

Writing Improper Fractions as Mixed Numbers

- 1) Divide the numerator by the denominator.
- 2) The quotient becomes the whole number.
- 3) The remainder is the numerator
- 4) The denominator remains the same.

$$\frac{15}{4} = 3\frac{3}{4}$$

1.) $\frac{42}{11}$	2.) $\frac{18}{5}$	3.) $\frac{15}{3}$	4.) $\frac{59}{6}$
---------------------	--------------------	--------------------	--------------------

RECIPROCAL

The reciprocal is used when dividing fractions. To find the reciprocal of a number, simply FLIP or SWITCH the numerator and the denominator.

To write the reciprocal of a mixed number, you must first turn the mixed number into an improper fraction.

EX: The reciprocal of $2\frac{4}{5}$ is $\frac{5}{14}$

Find the reciprocal:

1) $\frac{1}{5}$

2) 19

3) $3\frac{3}{8}$

4) $\frac{12}{7}$

5) $\frac{2}{10}$

ADD & SUBTRACT

1. Find the LCM of the denominators
2. Write an equivalent fraction for each
3. Add or subtract the fractions
4. Add or subtract the whole numbers
5. Simplify your answer

* Remember - you may have to borrow from the whole number when subtracting fractions

Example:

$$\begin{array}{r} 5 \frac{1}{2} \\ + 2 \frac{3}{4} \\ \hline 7 \frac{5}{4} \end{array}$$

Step 1: LCM of 2 and 4 is 4!

Step 2: $\frac{1}{2} = \frac{2}{4}$

Step 3: $\frac{2}{4} + \frac{3}{4} = \frac{5}{4}$

Step 4: $7 \frac{5}{4} = 8 \frac{1}{4}$

Example:

$$\begin{array}{r} 4 \frac{5}{6} \\ - 1 \frac{2}{9} \\ \hline 3 \frac{11}{18} \end{array}$$

Step 1: LCM of 6 and 9 is 18!

Step 2: $4 \frac{5}{6} = 4 \frac{15}{18}$

Step 3: $1 \frac{2}{9} = 1 \frac{4}{18}$

Step 4: $3 \frac{11}{18}$

1.) $10 \frac{2}{3} - 2 \frac{1}{2} =$

2.) $15 \frac{5}{6} + 18 \frac{2}{3} =$


3.) $2 \frac{3}{4} - 1 \frac{2}{8} =$

MULTIPLY & DIVIDE

To multiply fractions:

1. Cross reduce if possible
2. Multiply numerators
3. Multiply denominators
4. Simplify

To divide fractions: (stay, switch, flip)

1. Keep the first fraction
2.  the second fraction (the reciprocal)
3. Change \div to \times
4. Multiply numerators, multiply denominators
5. Simplify

Example:

$$1 \frac{1}{4} \bullet \frac{2}{3} =$$

Step 1: Change $1 \frac{1}{4}$ to $\frac{5}{4}$

Step 2: $\frac{5}{4} \bullet \frac{2}{3}$

Step 3: $5 \bullet 2 = 10$

Step 4: $4 \bullet 3 = 12$

Step 5: $\frac{10}{12} = \frac{5}{6}$

Example:

$$\frac{5}{9} \div \frac{1}{3} =$$

Step 1 and 2: $\frac{5}{9} \div \frac{3}{1}$

Step 3: $\frac{5}{9} \times \frac{3}{1}$

Step 4: $\frac{5}{3} \times \frac{1}{1}$ $5 \times 1 = 5$ $3 \times 1 = 3$

Step 5: $\frac{5}{3} = 1 \frac{2}{3}$

1.) $\frac{9}{14} \div \frac{1}{6} =$

2.) $2 \frac{7}{10} \div 3 \frac{3}{5} =$

3.) $\frac{3}{5} \bullet 2 \frac{2}{9} =$

INTEGERS

Integers: All positive **AND** negative **WHOLE** numbers including zeros.

- Numbers greater than zero are **positive numbers**.
- Numbers less than zero are **negative numbers**.
- On a number line...
 - the farther a number is to the right, the greater that number is
 - the farther the number is to the left, the smaller the number is.

Examples: $-4 < 7$ $-8 < -4$ $10 > -6$

Positive:	Gain, above sea level, up, rise, increase, deposit,
Negative:	Loss, below sea level, down, decrease, withdrawal,
Zero:	Sea level, origin

Absolute Value: the distance a number is from zero on a number line $|-3| = 3$

Opposites: two numbers that are the same distance from 0, but are in opposite directions -9 and 9

Write as an integer: 1) Loss of 17 yards 2) deposit 9 dollars 3) 2 ft below sea level

Write the opposite: 4) -170 5) 0 6) 1430

Find the absolute value: 7) $|-15|$ 8) $|6|$ 9) $-|210|$

Is it an integer?: 10) 44 11) $3/4$ 12) -6.2

Write in descending order: 13) -122, -30, 0, 5, 12, -12, -4

Write in ascending order: 14) -0.25, -0.78, -0.13, 0.25, -0.4

Word Problem: 15) Friends decided to go golfing. Kevin had a score of -3. Logan had a score of +2. Alex had a score of -5. Which golfer had the best score? Worst score?

EOG Style Questions

1. Simplify the expression: 6^3

- A)216 B)18
C)63 D)36

2. What is another way of expressing

$$8 \times 8 \times 8 \times 8 \times 8?$$

- A) 5^8 B) 8^5
C)63 D)216

3. Sal handed out 125 flyers that gave students the time and place of tryouts for the school soccer team. What is 125 written in exponential notation?

- A) 3^5 B) 5^3
C) 12^5 D) 25^5

4. Karen has a softball game every 3 days and a soccer game every 4 days. If she has both a softball and soccer game on the same day, how many days will it be before she plays in both games again?

- A)30 B)7
C)12 D)24

5. Find the LCM of 3, 6 and 15?

- A)30 B)15
C)18 D)60

6. A nursery in Raleigh has 18 beech trees, 24 pine trees, and 30 maple trees. The manager of the nursery wants each group of trees to have the same number of trees in each row. What is the greatest number of trees that each group can have in a row?

- A)6 B)18
C)9 D)3

7. What is the prime factorization of 50?

- A) 2×5^2 B) 2×25
C) $2^2 \times 5$ D) 5^3

8. Which of these is a prime number ?

- A)69 B)38
C)37 D)74

9. Tim works in a shipping department of a toy store. Every 6 weeks he receives a shipment of games. Every 9 weeks he receives a shipment of bicycles. If time received both a shipment of both the games and bicycles today, when is the next time both will arrive on the same day?

- A)18 weeks B)12 weeks
C)8 weeks D)27 weeks

10. Find the GCF of 32 and 42?

- A)4 B)2
C)3 D)14

11. What is the prime factorization of 84?

- A) $2 \times 6 \times 7$ B) $2 \times 3 \times 7$
C) $2^2 \times 3 \times 7$ D) $2^3 \times 3 \times 7$

12. Which pair of numbers are both factors of 144?

- A) 2 and 7 B) 3 and 11
C) 4 and 14 D) 6 and 12

13. Karen, Diane and Marilyn were having lunch together. They all ordered the same sandwich. Karen ate $\frac{1}{2}$ of hers, Diane ate $\frac{3}{8}$ of hers, and Marilyn ate $\frac{2}{3}$ of hers. Who ate the most of their sandwich?

- A)Karen B)Diane
C)Marilyn D)Susan

14. Adam weighs 96 pounds. His father weighs $1\frac{3}{4}$ times as he does. How much does Adam's father weigh?

- A)158 lbs. B)168 lbs.
C)177 lbs. D)188 lbs.

15. What is the least common denominator for the following fractions? $\frac{5}{8}$ and $\frac{7}{12}$

- A)6 B)12
C)32 D)24

16. Suzanne needs material for a school project. She buys 4.25 yards at \$4.27 a yard. What is the total cost of material?

- A)\$8.52 B)\$21.78
C)\$181.48 D)\$18.15

17. Find $10.3 - 3.07$

- A)7.23 B)7.63
C)13.37 D)6.83

18. Franklin bought 2 pencils for \$0.79 each, 4 notebooks for \$3.29 each, and comic book for \$1.29. How much change will he receive from \$20?

- A)\$5.26 B)\$16.03
C)\$3.97 D)\$11.97

19. $0.6 \div 0.3$

- A)2 B)60
C)0.6 D)20

20. One of the performers at the circus is Zack, the human cannonball. On Saturday he does three shows. His distances measure 9.2 meters, 15.5 meters, and 16.8 meters. What is the total distance Zack flies that day?

- A)40.6 m B)41.5 m
C)40.9 m D)41.8 m

21. Steak costs \$2.90 a pound at the market. Mary buys 4.2 pounds. Find the cost.

- A)\$7.10 B)\$16.38
C)\$12.18 D)\$13.75

22. Graham has \$86.69 in his checking account. He takes out \$32.38. How much money does he have left?

- A)\$54.32 B)\$54.31
C)\$117.05 D)\$119.07

23. An English teacher bought 32 copies of the same book for her students. She spent \$199.36. How much did each book cost?

- A)\$6.23 B)\$6.21
C)\$5.98 D)\$5.97

24. Round 0.7842 to the nearest tenth?

- A) 0.7 B) 0.78
C) 0.79 D) 0.8

25. Evaluate 0.2×0.079 .

- A) 0.0158 B) 1.58
C) 15.8 D) 0.158

26. Charles ordered 2 pizzas for a party. At the end of the party, $\frac{3}{8}$ of one pizza was left over, and $\frac{5}{16}$ of the other pizza was left over. How much pizza was eaten at the party?

- A) $\frac{5}{16}$ B) $\frac{11}{16}$
 C) $1\frac{5}{16}$ D) $1\frac{11}{16}$

27. Christina is cutting wood in order to build the roof of a new house. The piece of wood she is cutting is $14\frac{1}{4}$ feet long. If Christina cuts $3\frac{5}{8}$ feet from it, how long is the remaining piece of wood?

- A) $11\frac{5}{8}$ ft B) $11\frac{3}{8}$ ft
 C) $10\frac{7}{8}$ ft D) $10\frac{5}{8}$ ft

28. In a track-and-field meet, a triple jumper is given 3 attempts to jump as far as possible. Willie's 3 attempts are listed in the table.

Attempt #	Length (yd)
1	$17\frac{7}{16}$
2	$17\frac{5}{8}$
3	$17\frac{5}{8}$

Which statement is true?

- A) His 1st attempt was his longest jump
 B) His 3rd attempt was his shortest jump
 C) His jump length increased with each attempt
 D) His jump length decreased each attempt

29. An average sized person can burn about $5\frac{3}{8}$ calories a minute while jogging. Which of the following is equivalent to that amount?

- A) $5\frac{3}{16}$ calories B) $5\frac{9}{24}$ calories
 C) $5\frac{8}{24}$ calories D) $5\frac{9}{25}$ calories

30. Each week Kelly spends $\frac{3}{8}$ of her allowance on CD's, $\frac{4}{16}$ of her allowance on clothes, and saves $\frac{1}{3}$ of her allowance. What does Kelly do with the smallest part of her allowance?

- A) buys CD's B) buys clothes
 C) saves D) goes to the movies

31. Which statement is true?

- A) $\frac{3}{4} > \frac{5}{7}$ B) $\frac{9}{10} > \frac{11}{12}$
 C) $\frac{1}{2} < \frac{1}{4}$ D) $\frac{2}{8} = \frac{3}{16}$

32. What fraction of the triangles is shaded?



- A) $\frac{9}{11}$ B) $\frac{2}{11}$
 C) $\frac{9}{10}$ D) $\frac{2}{10}$

33. What is $\frac{3}{4}$ of $\frac{3}{4}$?

- A) 1 B) $\frac{1}{3}$
 C) $\frac{9}{16}$ D) 3