7th and 8th Grade Math Meet 2013

Name: _____ School: _____

EVENT 1: Problem Solving (no calculators)

Part 1: Computation (2 points each)

For questions 1-5
$$m = 7 \qquad n = -8 \qquad p = -4$$

1) $p - p - p =$

$-4 - (-4) - (-4)$

$-4 + 4 + 4 =$

4

2) $|n| + |-n| =$

$|-8| + |-(-8)|$

$8 + 8$

16

3) $-n \div (-p) \div (-p) =$

$-(-8) \div (-(-4)) \div (-(-4))$

$8 \div 4 \div 4 =$

½ or 0.5

4) $mnp =$

$7 \cdot (-8) \cdot (-4)$

224

5) $n \div (-p) + (-m) =$

$-8 \div (-(-4)) + (-7)$

$-8 \div 4 + (-7)$

$-2 + (-7)$

-9

Name: _____ School: _____

EVENT 1: Problem Solving (no calculators)

Part 2: Equations (2 points each)

1) $5.6 = 1.1p + 1.2$ 4

$$\begin{array}{rcl} -1.2 && -1.2 \\ \hline 4.4 &=& 1.1p \\ \hline 1.1 && 1.1 \end{array}$$

2) $10 = \frac{2}{7}x + 4$ 21

$$\begin{array}{rcl} -4 && -4 \\ \hline \frac{7}{2} \cdot \frac{\overset{3}{6}}{1} &=& \frac{2}{7}x \cdot \frac{7}{2} \end{array}$$

3) $5m + 2 (m + 1) = 23$ 3

$$5m + 2m + 2 = 23$$
$$7m + 2 = 23$$
$$\begin{array}{rcl} -2 & -2 \\ \hline \end{array} \qquad \frac{7m}{7} = \frac{21}{7}$$

4) $3 (d + 12) = 8 - 4d$ -4

$$3d + 36 = 8 - 4d$$
$$\underline{4d \qquad\qquad 4d} \qquad \frac{7d}{7} = \frac{-28}{7}$$
$$7d + 36 = 8$$
$$-36 = -36$$

5) $-15c + 7c + 1 = 3 - 8c$ no solution

$$-8c + 1 = 3 - 8c$$
$$\underline{8c \qquad\qquad 8c}$$
$$1 \neq 3$$

Name: _____ School: _____

EVENT 2: Consumer Math

(5 points each)

A store is having a store-wide sale. On Monday, everything in the store is 15% off, on Tuesday 20% off, on Wednesday 25% off, on Thursday 30% off and Friday 50% off.

1. Joe goes on Monday and buys a pair of pants that were regularly $45.00. What does he pay for the pants?

   45   45.00
   X .15   - 6.75
   ─────   ───────
   6.75   38.25

   $38.25 _____

2. How much would Joe have saved if he bought the same pair of pants on Friday?

   45   38.25
   X .50   -22.50
   ─────   ───────
   22.50   15.75

   $15.75 _____

3. Susan bought a blouse for $32, a skirt for $46, and a sweater for $55. What is her discount if she went on Wednesday?

   32   133
   46   133   X .25
   55   ─────

   $33.25 _____

4. How much did Susan pay for her clothing?

   133.00
   - 33.25
   ────────

   $99.75 _____

5. How much would Susan have saved if she went on Friday instead of Wednesday?

   133   133.00   99.75
   X .50   - 66.50   - 66.50
   ─────   ───────   ───────
   66.50   33.25

   $33.25 _____
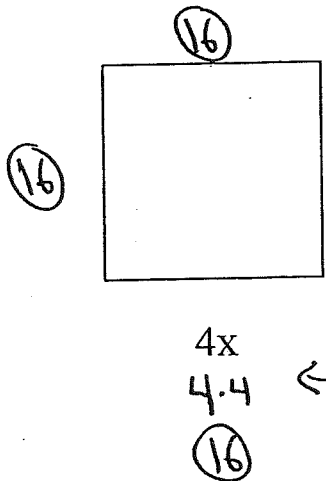
Name: _____ School: _____

EVENT 3: Mathematical Reasoning

(7 points each)

1. Find the perimeter of the square

⑯

⑯   16
       36 – 5x

4x
4·4
⑯

P = 64

$36 - 5x = 4x$
  $5x$ $5x$
$\overline{\quad 36 = 9x \quad}$
  $9 \qquad 9$
$\boxed{4 = X}$

$16 \cdot 4 = 64$

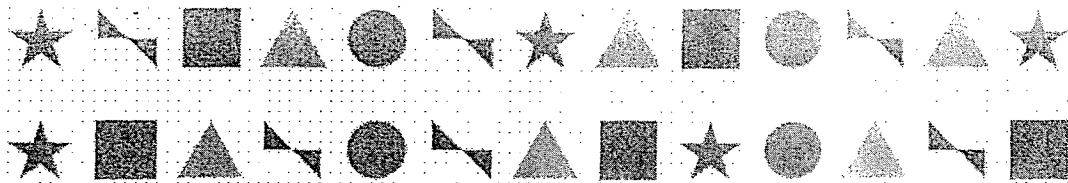2. Find the surface area of the house. Do not include the floor of the house. (LABEL your answer)

5 ft
3 ft
5 ft   5 ft
       10 ft
8 ft
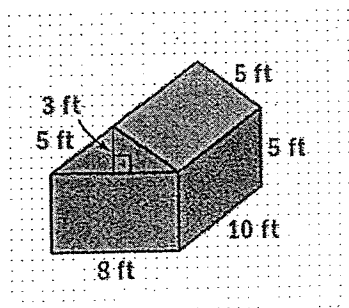
S.A. = 384 sq feet

8 total sides
$\overline{\qquad\qquad}$
50
50
12
12
50
50
40
40

3. In the first pattern shown below, the star repeats every 6 figures. In the second pattern, the star repeats every 8 figures. How many figures after the first figure will both patterns have a star?

LCM: 6: 6, 12, 18, (24)
8: 8, 16, (24)

24th figure

4. The diagram shows a hexagon, and the total length of lines shown in the diagram is 108 inches. How many inches are there in the perimeter of the entire hexagon? (LABEL your answer)
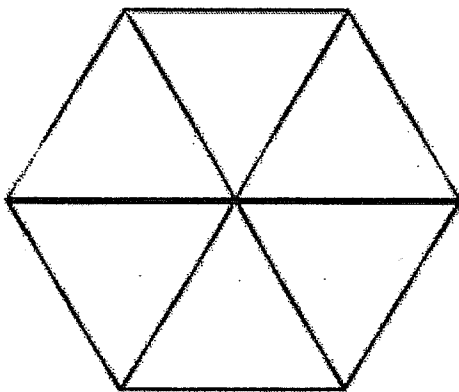
(9 in each)
12⟌108

$9 \cdot 6 = 54$

54 inches

5. In a recent election, 52% of the voters voted for candidate A, and 48% voted for candidate B. If a total of 24,000 voters participated, then how many more voters voted for candidate A?

52% of 24,000 = 12,480
48% of 24,000 = 11,520
                 ⎯⎯⎯⎯
                   960

960 votes

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EVENT 4: Mental Math (no calculators)

1 point for each correct answer

1)   60

$3 + 27 = 30$
$13 + 17 = 30$ _____
              60

2)   3

$\dfrac{1}{12} \cdot 36 = ③$

3)   17.9

$3.4 + 6.6 = 10$
$10 + 7.9 = ⟨17.9⟩$

4)   0.88

$30\% + \frac{1}{4} + 0.33$
$.30 + .25 + .33 = ⟨0.88⟩$

5)   1

$x^0 = 1$

6)   28

$\dfrac{4}{0\cancel{8}} \cdot \cancel{63} = 28$

7)   0

$5 + 9 + 1 - 15 = 0$

8) $3

$20 \cdot .10 = 2$
$20 \cdot .05 = 1$ _____
            $③$

9) $\frac{1}{12}$

$\dfrac{\cancel{3} \cdot \cancel{14} \cdot \cancel{20}}{4 \cdot \cancel{8} \cdot \cancel{22}} = \dfrac{1}{12}$

10) $12m + 8a + 20t + 32h$

$4(3m + 2a + 5t + 8h)$

Name: _____ School: _____

EVENT 5: Team Problems (with calculators)

(5 points each)

Bobo was walking down the street one day, minding his own business, when he saw a sign in the window of a pet store offering "MAGIC ZOIDS" for only $1 each. Since he didn't have anything else to do that day, and he had a spare dollar, he decided to buy a "Magic Zoid".

Bobo took the zoid home and put it in his 55 gallon fish tank. It looked like a normal zoid to him, so he couldn't understand why the pet store called it magic. The next day, Bobo looked in the tank and was shocked to discover that he now had two zoids! The new fully-grown zoid seemed to have appeared out of nowhere!

On the following day, Bobo was again shocked: his tank now held four zoids. When the number of zoids doubled again the next day, he began to worry that his fish tank might run out of space. He called the pet store and found out that he could keep 2 zoids for every 5 gallons of water.

1. How many zoids can Bobo keep in his fish tank?

$$\frac{55}{5} = 11 \qquad 11 \cdot 2 = 22$$

22 zoids

2. If he bought the original zoid on October 1, on what is the last date that his tank will be large enough to hold all of the zoids?

Oct 1	Oct 2	Oct 3	Oct 4	Oct 5	Oct 6
1	2	4	8	⑯	3̶2̶

October 5th

3. Use exponents to tell how many zoids Bobo had on October 10ᵗʰ?

$2^0, 2^1, 2^2, 2^3, 2^4, 2^5 \ldots 2^9$ on Oct 10

2^9

4. Use exponents to tell how many zoids Bobo had on October 31ˢᵗ?

Exponent is one less
than the number of days

2^30

Name: _____ School: _____

EVENT 5: Team Problems (with calculators)

(5 points each)

MENU
Hamburger (h) - $1.85
Cheeseburger (c) - $2.15
Fries (f) - $1.05
Small Soda (s) - $0.95
Medium Soad (m) - $1.25
Large Soda (r) - $1.55
Extra Large Soda (x) - $2.05

1. $3c + 3d = \$11.10$ What does d equal?

    $1.55

    $$6.45 + 3d = 11.10$$
    $$-6.45 \qquad -6.45$$
    $$\frac{3d}{3} = \frac{4.65}{3}$$

2. $3h + 5y = \$7.90$ What does y equal?

    $0.47

    $$5.55 + 5y = 7.90$$
    $$-5.55 \qquad -5.55$$
    $$\frac{5y}{5} = \frac{2.35}{5}$$

3. $2f + 3m + 4p = \$12.25$ What does p equal?

    $1.60

    $$2.10 + 3.75 + 4p = 12.25$$
    $$5.85 + 4p = 12.25$$
    $$-5.85 \qquad -5.85$$
    $$\frac{4p}{4} = \frac{6.40}{4}$$

4. $2h + 4f - q = \$7.50$ What does q equal?

    $0.40

    $$3.70 + 4.20 - q = 7.50$$
    $$7.90 - q = 7.50$$
    $$-7.90 \qquad -7.90$$
    $$-q = -.40$$
    $$q = .40$$

5. $5c - 3w = \$8.53$ What does w equal?

    $0.74

    $$10.75 - 3w = 8.53$$
    $$-10.75 \qquad -10.75$$
    $$\frac{-3w}{-3} = \frac{-2.22}{-3}$$

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EVENT 5: Team Problems (with calculators)

(5 points each*)*

Robert, Barry, and Lucy all compete in the pole vaulting competition for their high school track team. The height of Robert's best pole vault in a competition is $1\frac{1}{6}$ times the height of Barry's best pole vault, and Barry's best pole vault is $\frac{8}{9}$ times the height of Lucy's best pole vault. The height of Lucy's best pole vault is 12 feet, $4\frac{1}{2}$ inches.

1. Write an equation that shows how you can find the height of Barry's best pole vault. (Use b for barry and y for lucy)

$$B = \frac{8}{9}Y$$

2. Solve the equation in Q1 to determine the height of Barry's best pole vault. (Answer in inches)

$$B = \frac{8}{9}\left(148.5\right)$$ **132 inches**

3. Write an equation that shows how you can find the height of Robert's best pole vault. Use improper fraction in your equation. (Use r for Robert and b for Barry)

$$R = \frac{7}{6}B$$

4. Solve the equation in Q3 to determine the height of Robert's best pole vault. (Answer in inches)

$$R = \frac{7}{6}\left(132\right)$$ **154 inches**

5. What is the height of all three pole vaulters? (Answer in inches)

$$132 + 154 + 148.5 =$$ **434.5 inches**
$$\;\;B\;\;\;\;\;R\;\;\;\;\;L$$

A Trap =

Volume of a cylinder: $V = \pi$ x radius squared x height
Circumference of a circle = 2 x π x radius
Area of a circle = π x radius squared

Label!!

1. The perimeter of the patio is 132 feet. The lengths of two of the sides are equal. The length of third side is ¾ the length of one of the other two sides. What are the lengths of the three sides of the patio?

$X + X + \frac{3}{4}X = 132$

$\frac{2.75x = 132}{2.75} \quad \frac{}{2.75}$

36 ft by 48 ft by 48 ft

2. All three sides of the vegetable garden are equal. The perimeter is 48 feet. What is the length of a side of the vegetable garden?

$\frac{48}{3} =$

16 feet

3. The length of the side of the flower garden that is along the patio is 20 feet. The vertical distance between this side and the side opposite it is approximately 14 feet. What is the approximate area of the flower garden?

$20 ft \times 14 ft =$

280 sq feet

4. What is the total area of both gardens?

$\frac{(20+36)14}{2} =$

392 sq feet

5. The pool has a diameter of 20 feet. What is the circumference of the pool? What is the area of the pool? Round to the nearest whole numbers.

$C = 3.14 \times 20 =$

$A = 3.14 \times 10^2 =$

C = 63 ft
A = 314 sq ft

6. The pool is flat on the bottom and has a uniform depth of 4.5 feet. Find the volume of this cylindrical pool. Use the formula on the top of the page. (Use 3.14 for π) Round to the nearest whole number.

$V = 3.14 \cdot 10^2 \cdot 4.5$

1,413 cu ft