Meet 5 - Event A   2005-2006
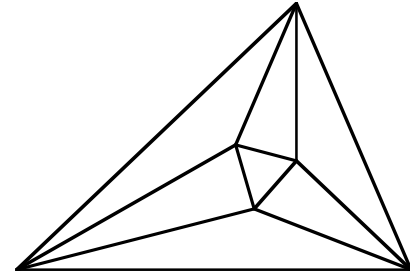
Questions are worth 2-2-2-4-4 points respectively.
<u>Remember your units.</u>

a_____1.   Given: 47, 22, 18, 50, 50, 33
                 a: What is the median?
b_____   b: What is the mean?

_____2.   Find the median of the numbers in this stem and leaf plot.

3	0 3 1
2	5 2 9
1	3 3
0	9

_____3.   There are 4 white marbles, 5 red marbles and 6 blue marbles in the jar. If George picks up one, without looking at them, what is the probability the marble George picked was red? Answer as a quotient of relatively prime numbers.
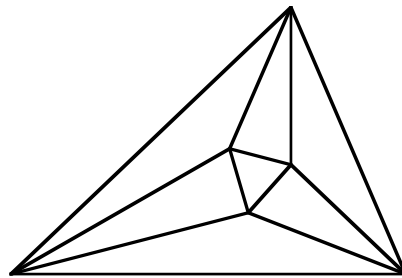
_____4.   If the surface area of a cube is 1176 cm^2, what is the volume?

_____5.   If the volume of a sphere is doubled, by what number was the radius multiplied, to the nearest hundredth?

Name_____School_____

Meet 5 - Event A   2005-2006
Answers

Questions are worth 2-2-2-4-4 points respectively.
<u>Remember your units.</u>

a _____40_____ 1.   a. Median is <u>middle</u>: 18, 22, 33, 47, 50, 50; $\dfrac{33+47}{2} = \dfrac{80}{2} = 40$

b _____$36\frac{2}{3}$_____   b: Mean is <u>average</u>: $\dfrac{47+22+18+50+50+33}{6} = \dfrac{220}{6} = 36\frac{2}{3}$

or $36.\overline{6}$

_____25_____ 2.   Reorder the numbers:

$$\begin{array}{c|ccc} 3 & 0 & 1 & 3 \\ 2 & 2 & ⑤ & 9 \\ 1 & 3 & 3 \\ 0 & 9 \end{array}$$
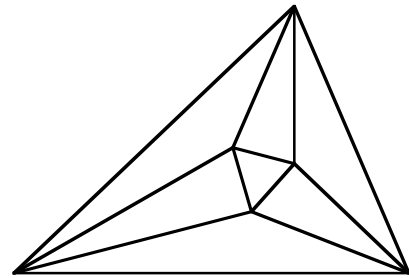
_____$\dfrac{1}{3}$_____ 3. $P_{(Red)} = \dfrac{5}{15} = \dfrac{1}{3}$ (Not $0.\overline{3}$)

_____2744 cm^3_____ 4. $S.A. = 6x^2 = 1176$, so $x^2 = 196$, $x = 14$; $V = 14^3 = 2744$

_____1.26_____ 5. $V = \dfrac{4}{3}\pi r^3$, $2V = \dfrac{4}{3}\pi R^3$, so $2\left(\dfrac{4}{3}\pi r^3\right) = \dfrac{4}{3}\pi R^3$, or $2r^3 = R^3$, so $\left(\sqrt[3]{2}\,r\right)^3 = R^3$

$\sqrt[3]{2} = 1.2599$

Meet 5 - Event B   2005-2006

Questions are worth 2-2-2-4-4 points respectively.
<u>Remember your units.</u>

_____1. Rewrite $\displaystyle\sum_{k=2}^{4}\left(k+5\right)$ to have an index of $k=1$ to 3.

_____2. Evaluate: $\displaystyle\sum_{k=0}^{4}(-1)^{k}(3k)$.

_____3. Write as a trinomial in decreasing order: $(3-x)(x+4)$.
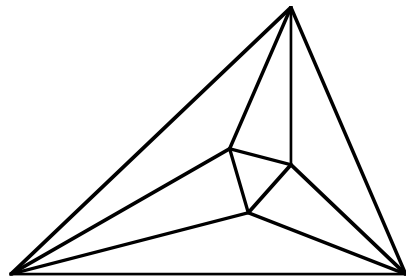
_____4. What is $x^{2}-1$ divided by $x+1$?

_____5. There are 12 red candy kisses, 12 green candy kisses, and 12 silver candy kisses in a bowl. If Jared just reaches in and grabs 1 candy kiss at a time until he has three, what is the probability he gets one of each color, as a quotient of relatively prime numbers.

Name_____   School_____

Meet 5 - Event B   2005-2006
Answers

Questions are worth 2-2-2-4-4 points respectively.
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$\dfrac{\sum\limits_{k=1}^{3}\left(k+6\right)}{}$ 1. $\sum\limits_{k=2}^{4}\left(k+5\right) = 7+8+9 = \sum\limits_{k=1}^{3}\left(k+6\right)$

$\underline{\qquad 6 \qquad}$ 2. $\sum\limits_{k=0}^{4}(-1)^{k}(3k) = 0+(-1)(3)+(-1)^{2}(6)+(-1)^{3}(9)+(-1)^{4}(12) = 0-3+6-9+12 = 6$

$\underline{-x^{2}-x+12}$ 3. $3x+12-x^{2}-4x = -x^{2}-x+12$

$\underline{\qquad x-1 \qquad}$ 4. $\dfrac{x^{2}-1}{x+1} = \dfrac{\cancel{(x+1)}(x-1)}{\cancel{(x+1)}} = (x-1)$

or $\quad x+1\overline{)x^{2}-1}$ with quotient $x-1$

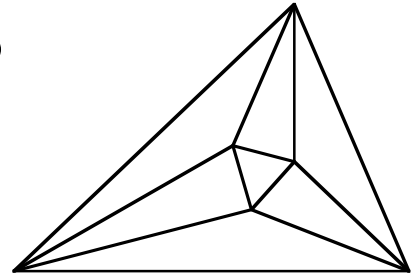$\qquad\qquad \dfrac{-(x^{2}+x)}{\quad -x-1}$

$\qquad\qquad \dfrac{-(-x-1)}{}$

$\dfrac{144}{595}$ 5. $P_{(\text{1st R})} = \dfrac{12}{36},\ P_{(\text{2 nd G})} = \dfrac{12}{35},\ P_{(\text{3rd S})} = \dfrac{12}{34},\ P_{(\text{R,G,S})} = \dfrac{12}{36}\times\dfrac{12}{35}\times\dfrac{12}{34} = \dfrac{1728}{42840}$

But there are six orders that will give him all three colors, so:

$6\times\dfrac{1728}{42840} = \dfrac{10368}{42840} = \dfrac{144}{595}$ (must have the fraction, not a decimal)

Meet 5 - Event C   2005-2006

Questions are worth 2-2-2-4-4 points respectively.
<u>Remember your units.</u>

_____1. Expand $(2x - 3y)^2$ and simplify

_____2. What number must be removed from 92, 52, 24, 17, and 34 to give a mean of 48.75?

_____3. Factor completely: $4x^2 - 2x - 30$.
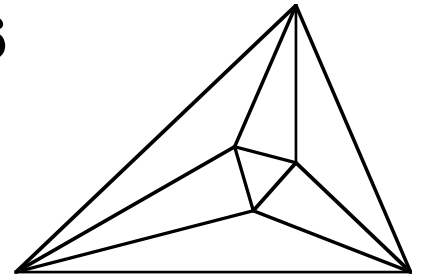
_____4. If the surface area of a cube is 1176 cm^2, what is the volume?

_____5. If the volume of a sphere is doubled, by what number was the radius multiplied, to the nearest hundredth?

Name_____School_____

Meet 5 - Event C   2005-2006
Answers

Questions are worth 2-2-2-4-4 points respectively.
<u>Remember your units.</u>

$\underline{4x^2 - 12xy + 9y^2}$ 1. $(2x - 3y)(2x - 3y) = 4x^2 - 6xy - 6xy + 9y^2 = 4x^2 - 12xy + 9y^2$

In any order.

$\underline{\qquad 24 \qquad}$ 2. $\dfrac{x}{4} = 48.75$, so $x = 195$, $92 + 52 + 24 + 17 + 34 = 219$, $219 - 195 = 24$

$\underline{2(x - 3)(2x + 5)}$ 3. $4x^2 - 2x - 30 = 2(2x^2 - x - 15) = 2(x - 3)(2x + 5)$
or $2(2x + 5)(x - 3)$

$\underline{\quad 2744 \ cm^3 \quad}$ 4. $S.A. = 6x^2 = 1176$, so $x^2 = 196$, $x = 14$; $V = 14^3 = 2744$

$\underline{\qquad 1.26 \qquad}$ 5. $V = \dfrac{4}{3}\pi r^3$, $2V = \dfrac{4}{3}\pi R^3$, so $2\left(\dfrac{4}{3}\pi r^3\right) = \dfrac{4}{3}\pi R^3$, or $2r^3 = R^3$, so $\left(\sqrt[3]{2}\,r\right)^3 = R^3$

$\sqrt[3]{2} = 1.2599$

Meet 5 - Team Event   2005-2006

Questions are worth 4 points each.
<u>Remember your units.</u>
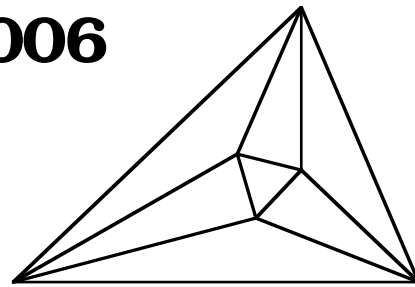
_____1. There are 4 white marbles, 5 red marbles, and 6 blue marbles in the jar. If George picks up one without looking at them, what is the probability the marble George picked was red or white? Answer as a quotient of relatively prime numbers.

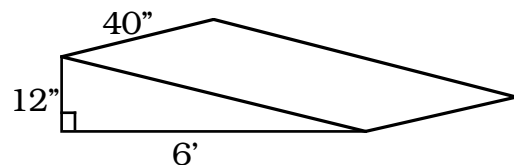$\sum_{k=1}^{5}$_____2. Write in sigma notation: $\dfrac{1}{2}+1+1\dfrac{1}{2}+2+2\dfrac{1}{2}$.

_____3. Write as a trinomial in decreasing order: $(2x-3)(3x-7)$.

_____4. If a ball has a diameter of 13 inches. What is the volume of air it can hold, to the nearest hundredth?

_____5. Write in sigma notation, starting with k=0: 3+9+27+81

_____6. How many cubic inches are in one cubic yard?

_____7. Simplify: $\dfrac{2x^{3}-x}{2x}$.

_____8. The contractor needed to make a concrete ramp that was as marked. What volume of concrete does she need?

_____9. Simplify and write in decreasing order: $4-5x+10-3x^{3}+7x^{2}+x-5x^{3}$.

_____10. What is the volume of a box 15 inches by 6 inches by 1 foot?

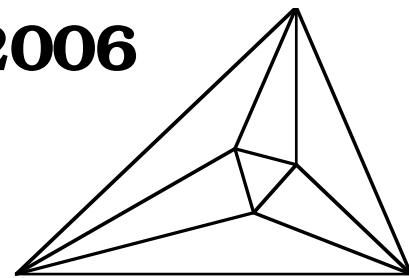School_____

Meet 5 - Team Event   2005-2006
Answers

Questions are worth 4 points each.
<u>Remember your units.</u>

____$\dfrac{3}{5}$____1. $P_{(Red)} = \dfrac{5}{15}, \quad P_{(White)} = \dfrac{4}{15}, \quad P_{(Red\ or\ White)} = \dfrac{5}{15} + \dfrac{4}{15} = \dfrac{9}{15} = \dfrac{3}{5}$

____$\displaystyle\sum_{k=1}^{5} \dfrac{k}{2}$____2. $\dfrac{1}{2}(1) + \dfrac{1}{2}(2) + \dfrac{1}{2}(3) + \dfrac{1}{2}(4) + \dfrac{1}{2}(5)$, so $\dfrac{1}{2}k$ or $\dfrac{k}{2}$ or 0.5k

____$6x^2 - 23x + 21$____3. $6x^2 - 14x - 9x + 21 = 6x^2 - 23x + 21$

____1150.35 in^3____4. Radius=6.5 in. $V = \dfrac{4}{3}\pi(6.5)^3 = 1150.34651$

____$\displaystyle\sum_{k=0}^{3} 3\left(3^k\right)$____5. $3^1 + 3^2 + 3^3 + 3^4 = 3(3^0) + 3(3^1) + 3(3^2) + 3(3^4)$

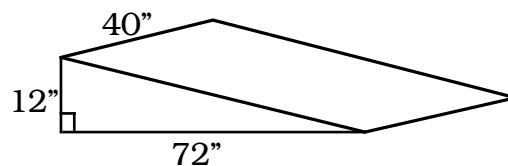or $\displaystyle\sum_{k=0}^{3} 3^{k+1}$ Check out student answers. There are probably others that work.

____46656____6. $36^3 = 46656$

____$\dfrac{2x^2 - 1}{2}$____7. $\dfrac{\cancel{x}(2x^2 - 1)}{2\cancel{x}} = \dfrac{2x^2 - 1}{2}$ or $x^2 - \dfrac{1}{2}$

or $x^2 - \dfrac{1}{2}$

V = Area of triangle $\times$ 40

____17280 in^3____8. $V = \dfrac{1}{2}(72)(12)(40) = 17280$ in^3

or 10 ft^3

$V = \dfrac{1}{2}(6)(1)\left(3\dfrac{1}{3}\right) = 10$ ft^3

____$-8x^3 + 7x^2 - 4x + 14$____9.

____1080 in^3____10. $15 \times 6 \times 12 = 1080$ in^3 or $1\dfrac{1}{4} \times \dfrac{1}{2} \times 1 = \dfrac{5}{8} = 0.625$ ft^3

or 0.625 ft^3