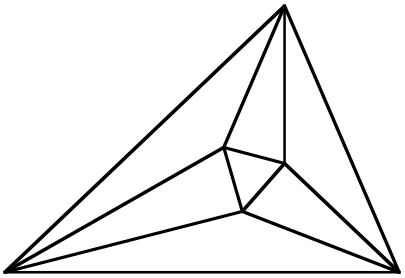
Meet 5 - Event A 2009-2010



Questions are worth 2-2-2-4-4 points respectively.
Remember your units.

NO CALCULATORS ALLOWED

_____1. Given a set of integer values, the three measures of the middle (mean, median, mode) are (in no particular order) 50, 51.75, 52.5. Which one is the mode?

_____2. A spherical balloon has a diameter of 20 cm. What volume of air is in the balloon, in terms of π?

_____3. Simplify: $\frac{5x+1-2(x-1)}{6x+6-5(x+1)}$.

_____4. The theater sold 100 adult tickets for $8 each, 20 senior tickets for $5 each, and 30 children's tickets for $5 each. What was the mean ticket price?

_____5. Profit is income minus cost. The Student Council sells dance tickets for $5 each. The decorations cost $50, the custodian costs $150, and the DJ costs $100. The PTA donated $40 to the students for the dance. Write a simplified equation for the profit, *P*, in terms of the number of tickets sold, *t*.

Name_____School_____

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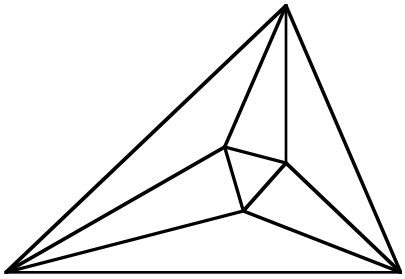
Answers



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50 1. The mode is the only integer.

$\frac{4000}{3}\pi\text{cm}^3$ 2. $V = \frac{4}{3}\pi r^3, \quad r = 10\text{cm}, \quad V = \frac{4}{3}\pi 10^3 = \frac{4000}{3}\pi\text{cm}^3$

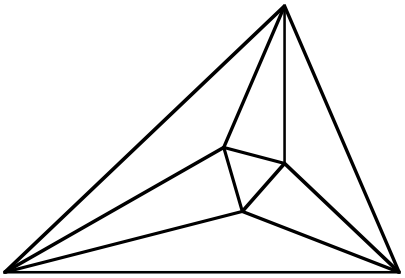
or $\frac{4000\pi}{3}\text{cm}^3$ Units of "cc" for cubic centimeters is fine.

3 3. $\frac{5x+1-2x+2}{6x+6-5x-5} = \frac{3x+3}{x+1} = \frac{3(x+1)}{x+1} = 3$

\$7 4. $100 \cdot 8 + 20 \cdot 5 + 30 \cdot 5 = \$1050, \quad 100 + 20 + 30 = 150$ tickets, $\frac{1050}{150} = \$7$ each

$P = 5t - 260$ 5. $P = 5t - 50 - 150 - 100 + 40, \quad P = 5t - 260$

Meet 5 - Event B 2009-2010



Questions are worth 2-2-2-4-4 points respectively.
Remember your units.

NO CALCULATORS ALLOWED

_____1. If the area of a circle is $36\pi \text{in}^2$, what is the diameter?

_____2. What is the intersection of $2 = 3x - y$ and $2x + y = 3$?

_____3. Write as a trinomial in decreasing order: $(x-3)(4x+5)$.

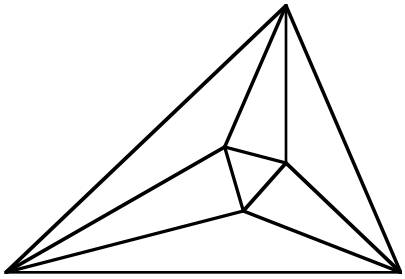
_____4. Sarah earned scores of 80, 90, and 95 on her first three tests. What does she need to score on her fourth test to average 90?

_____5. What is the area of the triangle formed by the y-axis, $y = 3 - \frac{3}{4}x$, and $y = \frac{1}{2}x - 2$?

Name_____School_____

Meet 5 - Event B 2009-2010

Answers



Questions are worth 2-2-2-4-4 points respectively.
Remember your units.

12 in 1. $36\pi = \pi r^2$, so $r = 6$, $d = 12$

(1, 1) 2. $y = 3x - 2$ and $y = 3 - 2x$, $3x - 2 = 3 - 2x$, $5x = 5$, $x = 1$, $y = 3(1) - 1 = 1$

$4x^2 - 7x - 15$ 3. $4x^2 + 5x - 12x - 15 = 4x^2 - 7x - 15$

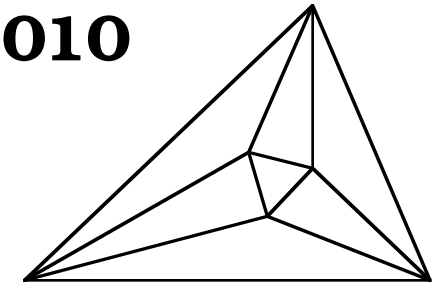
95 4. $\frac{80 + 90 + 95 + x}{4} = 90$, $265 + x = 4 \cdot 90 = 360$, $x = 95$

10 units^2 5. y-intercepts are (0,3) and (0,-2) so the triangle's base is 5.

$3 - \frac{3}{4}x = \frac{1}{2}x - 2 \Rightarrow \frac{1}{2}x + \frac{3}{4}x = 5$, $\frac{2}{4}x + \frac{3}{4}x = \frac{5}{4}x = 5 \Rightarrow x = 4$, $y = 0$, so height=4

$A = \frac{1}{2}(5)(4) = 10$ square units

Meet 5 - Team Event 2009-2010



Questions are worth 4 points each.
Remember your units.

NO CALCULATORS ALLOWED

_____1. Michael has a 60% chance of making a free throw in basketball. What is the probability that he makes three free throws in a row?

_____2. The following data have a range of 10, a mode of 40, and a mean of 39. What one integer can be added to the list and keep the same range, mode, and mean?

35, 36, 37, 38, 40, 40, 41, 45

_____3. Given the data in question 2, what two integers can be added to the list and keep the same range, mode, and mean?

_____4. Given the data in question 2, what is the interquartile range?

_____5. Simplify and write in decreasing order: $3x(x-2)-(x^2+7)+3x(x+2)(x+1)$.

_____% 6. If the surface area of a cube decreases by 19%, by what percent does the volume decrease?

_____7. Where do $y=3$ and $2x-4y=7$ intersect?

_____8. Mary wants to buy red wax to make four Christmas candles. The candles are cylindrical and 4 inches wide and 3 inches high. The wax blocks measure 1" by 4" by 3". How many blocks must she buy?

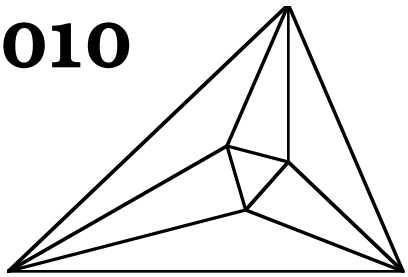
_____9. At what point do these three lines intersect: $2y=x+4, 2x+y=7. 2y=3x$?

_____10. What is the equation of the line parallel to $2x+y=7$ that goes through $(-1,1)$ in slope intercept form?

 School_____

Meet 5 - Team Event 2009-2010

Answers



Questions are worth 4 points each.
Remember your units.

0.216 or 21.6% 1. The probability of making the first shot and the second and the third is $0.6 \times 0.6 \times 0.6 = 0.216$

39 2. Add the mean value of 39. Any one value higher or lower will change the mean.

38, 40 3. The two integers must be equally above and below 39, so 38 and 40 keep the mode at 40. 37 and 41, 36 and 42, 35 and 43 all change the mode.

4 4. Median=39, Q1=36.5, Q3=40.5 so IQR=40.5-36.5=4

$3x^3 + 11x^2 - 7$ 5. $3x^2 - 6x - x^2 - 7 + 3x(x^2 + 3x + 2) = 3x^2 - 6x - x^2 - 7 + 3x^3 + 9x^2 + 6x = 3x^3 + 11x^2 - 7$

27.1% 6. Original cube side=1in, $A = 6\text{in}^2, V = 1\text{in}^3$ Decreasing area:
$100 - 19 = 81, A = 6(0.81) = 6x^2, x^2 = 0.81, x = 0.9, V = 0.9 \times 0.9 \times 0.9 = 0.729,$
$1 - 0.729 = 0.271$

$\left(9\frac{1}{2}, 3\right)$ 7. $2x - 4(3) = 7, 2x - 12 = 7, 2x = 19, x = \frac{19}{2} = 9\frac{1}{2} = 9.5$

(Accept any valid form of 9.5)

13 8. $V_{\text{candles}} = 4 \bullet \pi \bullet 2^2 \bullet 3 = 48\pi \sim 151\text{in}^3, V_{\text{block}} = 1 \bullet 4 \bullet 3 = 12\text{in}^3, \frac{151}{12} \sim 12.6$
So she needs 13 blocks of wax.

(2, 3) 9. Substitute $3x$ for $2y$ in the first equation: $3x = x + 4, 2x = 4, x = 2$ so $y = 3$
Check $(2, 3)$ in all three equations.

$y = -2x - 1$ 10. $y = -2x + 7$ so slope $= -2, 1 = -2(-1) + b, 1 = 2 + b, b = -1$