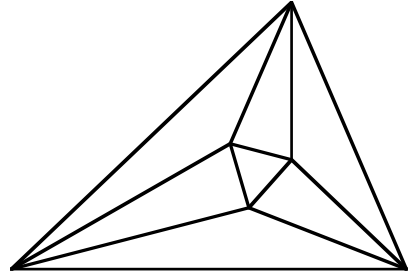


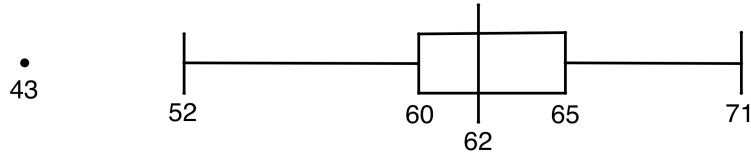
# Meet 5 - Event A 2012-2013

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

## NO CALCULATORS ALLOWED



\_\_\_\_\_ 1. In this box and whisker plot, is 62 defined as the mean, median, or mode?



\_\_\_\_\_ 2. In the box and whisker plot above, which of these is the interquartile range:  
2, 3, 5, 6, 8, 19, or 23?

\_\_\_\_\_ 3. If the data for the box and whisker plot above were graphed as a histogram,  
which interval is most likely to contain the peak (highest bar)?  
52-60, 60-62, 62-65, 65-71

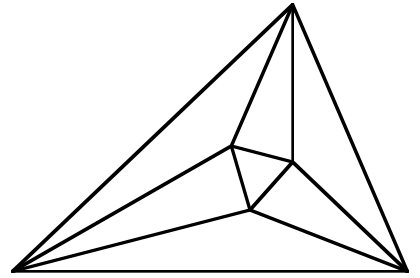
\_\_\_\_\_ 4. If scores of 60,  $a$ , 75,  $a$ ,  $a$ , 90 average to 80, what is  $a$ ?

\_\_\_\_\_ 5. What is the point of intersection of  $2x + 3y = 7$  and  $5y = 3x - 1$ ?

# Meet 5 - Event A 2012-2013

## Answers

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



median 1. The data is divided into quartiles.

5 2. Quartile 1 is 60 and Quartile 3 is 65, so the interquartile range is 5.

60 - 62 3. Each quartile has one-fourth of the data.

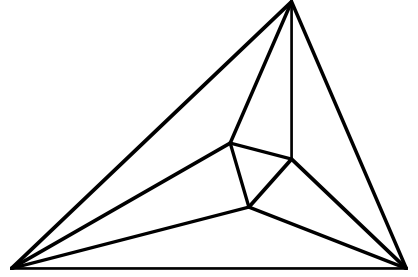
85 4.  $\frac{3a + 225}{6} = 80$ ,  $3a + 225 = 480$ ,  $3a = 255$ ,  $a = 85$

(2,1) 5.  $[3(2x + 3y = 7) + 2(-3x + 5y = -1)] = [(6x + 9y = 21) + (-6x + 10y = -2)] = [19y = 19]$ ,  $y = 1$   
 $2x + 3(1) = 7$ ,  $2x = 4$ ,  $x = 2$

# Meet 5 - Event B 2012-2013

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

**NO CALCULATORS ALLOWED**



\_\_\_\_\_ 1. Simplify:  $(3x^2 + 4x - 7) - 2(x^2 - 2x + 3)$ .

\_\_\_\_\_ 2. If the edges of a cube add up to 36 m, what is the volume?

\_\_\_\_\_ 3. A line has a slope of 2 and passes through point  $(a, b)$ . What is the  $y$ -coordinate of the point on the line where  $x = a + 6$ ?

\_\_\_\_\_ 4. A line has a slope of 2 and passes through point  $(a, b)$ . What is the  $y$ -coordinate of the point on the line where  $x = 2a$ ?

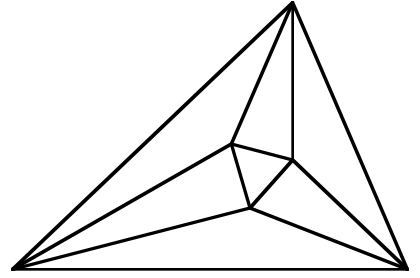
\_\_\_\_\_ 5. Three tennis balls just fit in a cylindrical can. If each tennis ball is 2.5 inches in diameter, what is the volume of the can? Leave  $\pi$  as  $\pi$ , and round the decimal multiplier to the nearest tenth.

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# Meet 5 - Event B 2012-2013

## Answers

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



$x^2 + 8x - 13$  1.  $3x^2 + 4x - 7 - 2x^2 + 4x - 6 = x^2 + 8x - 13$

$27 \text{ m}^3$  2. There are 12 edges to a cube, so  $s = 36 \div 12 = 3$  and  $V = 3^3$

$b + 12$  3. With a slope of 2, when  $x$  increases by 1,  $y$  increases by 2, so  $y = b + 12$ .

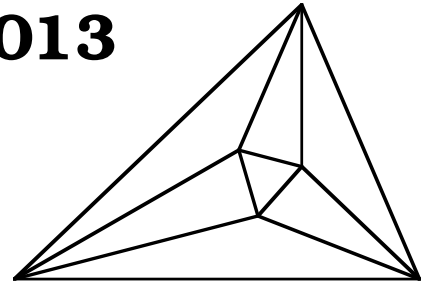
$b + 2a$  4.  $x = 2a = a + a$ , so  $x$  increased by  $a$ .  $y = b + 2a$  because  $y$  increases by twice as much.

$11.7\pi \text{ in}^3$  5. The height is  $3(2.5) = 7.5 \text{ in}$ . The base area is  $\pi(1.25)^2 = 1.5625 \text{ in}^2$   
 $V = 1.5625\pi \cdot 7.5 = 11.71875\pi \text{ in}^3$  ( $1.56 \times 7.5 = 11.700$ , but  $1.6 \times 7.5 = 12.0$ )

# Meet 5 - Team Event 2012-2013

Questions are worth 4 points each.  
Remember your units.

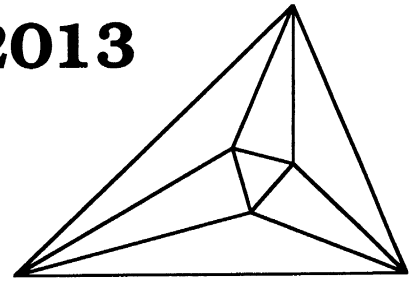
## NO CALCULATORS ALLOWED



- \_\_\_\_\_ 1. Find the two points where  $y = |x - 4|$  and  $y = \frac{2}{3}x - 2$  intersect. Leave the  
\_\_\_\_\_ coordinates as improper fractions or integers.
- \_\_\_\_\_ 2. Simplify and write in descending order:  $14 + 3(x^2 - 2) - 4(5 + 3x) - (x^2 + 3)$
- \_\_\_\_\_ 3. Write as a trinomial in descending order:  $(2x + 7)(9x - 4)$ .
- \_\_\_\_\_ 4. The altitudes of an equilateral triangle meet  $\frac{2}{3}$  of the way from the vertex to the side. If a tetrahedron has 3 base edges of 6 cm and the other 3 edges are 4 cm, what is the height of the tetrahedron?
- \_\_\_\_\_ 5. If the 3 base edges of a tetrahedron are 8 cm and the height is 6 cm, what is the volume? Leave in simplified radical form.
- \_\_\_\_\_ 6. What is the area of a parallelogram formed by  $y = 1$ ,  $y = x + 3$ ,  $y = 5$ , and  $y = x - 3$ ?
- \_\_\_\_\_ 7. The volume of a cube is  $216 \text{ ft}^3$ , What is the surface area?
- \_\_\_\_\_ 8. A rhombus is to be created from  $y = 2$ ,  $y = 6$ ,  $y = \frac{4}{3}x + 2$ , and one other line. What is one possibility for that line? Answer in  $Ax + By = C$  form.
- \_\_\_\_\_ 9. Simplify:  $\frac{4x^2 - 64}{x - 4}$ .
- \_\_\_\_\_ 10. Jackie's lowest score is 20 points below her highest score. Her two middle scores were 5 and 7 points above her lowest score. If her average score was 85, what was her highest score?

## Answers

Questions are worth 4 points each.  
Remember your units.

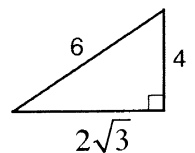
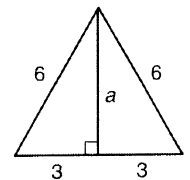


$\frac{\left(\frac{18}{5}, \frac{2}{5}\right)}{(6, 2)}$  1.  $\frac{2}{3}x - 2 = -x + 4, \frac{5}{3}x = 6, x = \frac{18}{5}, y = \frac{2}{5}; \frac{2}{3}x - 2 = x - 4, -\frac{1}{3}x = -2, x = 6, y = 2$   
(two points for each answer)

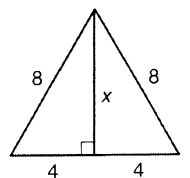
$2x^2 - 12x - 15$  2.  $14 + 3x^2 - 6 - 20 - 12x - x^2 - 3 = 2x^2 - 12x - 15$

$18x^2 + 55x - 28$  3.  $18x^2 - 8x + 63x - 28 = 18x^2 + 55x - 28$

$2 \text{ cm}$  4. The vertex is over the intersection of the altitudes in the base triangle, so each altitude of the base is  $\sqrt{36 - 9} = 3\sqrt{3}$  and the intersection is  $\frac{2}{3} \cdot 3\sqrt{3} = 2\sqrt{3}$  from the vertex. The height is  $\sqrt{16 - 12} = \sqrt{4} = 2 \text{ cm}$ .



$\frac{32\sqrt{3} \text{ cm}^3}{\text{or } 32\sqrt{3} \text{ cc}}$  5.  $V = \frac{1}{3} \cdot A \cdot h$ . The area of the base triangle is  $\frac{1}{2} \cdot 8 \cdot 4\sqrt{3} = 16\sqrt{3}$  since  $x = 4\sqrt{3}$ . So  $V = \frac{1}{3} \cdot 16\sqrt{3} \cdot 6 = 32\sqrt{3} \text{ cm}^3$



$24 \text{ units}^2$  6. When  $y = 1, 1 = x + 3 \Rightarrow x = -2, 1 = x - 3 \Rightarrow x = 4$ . When  $y = 5, 5 = x + 3 \Rightarrow x = 2, 5 = x - 3 \Rightarrow x = 8$ . The vertices are  $(-2, 1), (4, 1), (2, 5), (8, 5)$  so the base is  $4 - (-2) = 6$  and the height is  $5 - 1 = 4$ .  $A = 6 \cdot 4 = 24 \text{ units}^2$

$216 \text{ ft}^2$  7.  $216 = 6 \cdot 6 \cdot 6$  so each edge is 6 ft, S.A. =  $6 \cdot \text{Area of one face} = 6 \cdot 6 \cdot 6 = 216 \text{ ft}^2$

$4x - 3y = -26$  8. The triangle formed by  $x = 0, y = 6,$  and  $y = \frac{4}{3}x + 2$  is a right triangle, so the side of the rhombus is  $\sqrt{4^2 + 3^2} = 5$ . Slope of the line must be  $\frac{4}{3}$ , and the line must pass through  $(5, 2)$  or  $(-5, 2)$ .  $2 = \frac{4}{3}(\pm 5) + b, b = \frac{6}{3} \pm \frac{20}{3} = \frac{26}{3}$  or  $\frac{-14}{3}$

$\frac{4(x + 4)}{\text{or } 4x + 16}$  9.  $\frac{4(x^2 - 16)}{x - 4} = \frac{4(x + 4)\cancel{(x - 4)}}{\cancel{x - 4}} = 4(x + 4)$

$97$  10. Highest score =  $x$ , lowest score =  $x - 20$ . Middle scores =  $x - 20 + 5 = x - 15$  and  $x - 20 + 7 = x - 13$ .  $\frac{x + (x - 13) + (x - 15) + (x - 20)}{4} = 85$   $4x - 48 = 340, 4x = 388, x = 97$