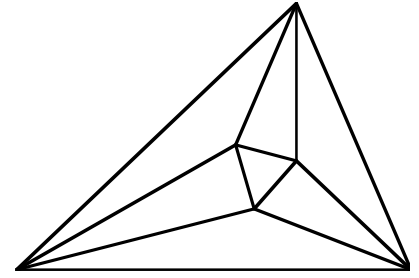


# Meet 4 - Event A 2005-2006

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



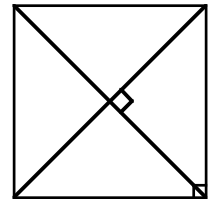
\_\_\_\_\_ 1. Solve for  $x$ :  
 $3x + 4 < 16$

\_\_\_\_\_ 2. Simplify:  $\sqrt{75}$

\_\_\_\_\_ 3. Find the surface area of a cube with a side of 5 cm.

\_\_\_\_\_ 4. The November ad said "20% Off" sale. The December ad said "30% Off the Sale Price." If you bought a sweater in December for \$24.36 with no sales tax, what was the original price?

\_\_\_\_\_ 5. For a quilt, a square is cut into 4 triangles as shown. If the leg of one triangle must be  $2 \frac{1}{2}$  inches long, how long is the edge of the square to the nearest  $\frac{1}{8}$  inch?

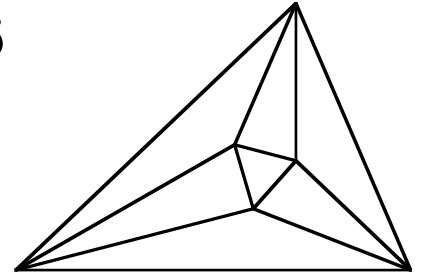


Name \_\_\_\_\_ School \_\_\_\_\_

# Meet 4 - Event A 2005-2006

## Answers

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



$x < 4$  1.  $3x < 12, x < 4$

$5\sqrt{3}$  2.  $\sqrt{75} = \sqrt{25 \cdot 3} = 5\sqrt{3}$

$150 \text{ cm}^2$  3.  $5^2 = 25 \text{ cm}^2$  on each of 6 sides.  $6 \times 25 = 150 \text{ cm}^2$ .

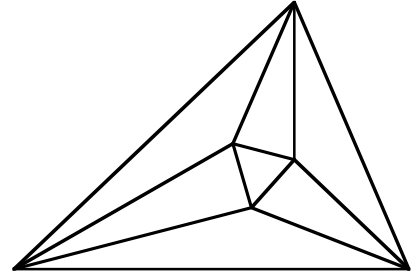
$\$43.50$  4.  $(0.80p)(0.70) = 0.56p = \$24.36$   
 $p = \frac{24.36}{0.56} = \$43.50$

$3.5''$  5.  $x = \sqrt{2.5^2 + 2.5^2} = 3.5355 = 3.5''$

or  $3\frac{1}{2}''$

# Meet 4 - Event B 2005-2006

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



\_\_\_\_\_ 1. Simplify:  $\sqrt{675}$

\_\_\_\_\_ 2. Solve for  $x$ :  $-2x < 18$

\_\_\_\_\_ 3. If the perimeter of an equilateral triangle is 18 inches, what is the area to two decimal places?

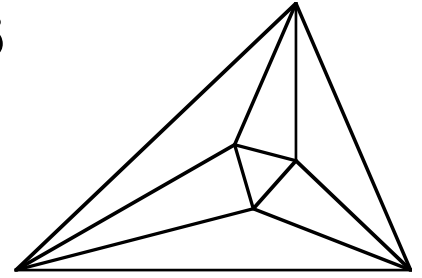
\_\_\_\_\_ 4. If the area of an equilateral triangle  $ABC$  is  $7 \text{ cm}^2$ , what is the area of an equilateral triangle  $DEF$  with the side  $DE=2AB$ ?

\_\_\_\_\_ 5. Solve for  $x$ :  $|x - 3| < 5$

# Meet 4 - Event B 2005-2006

## Answers

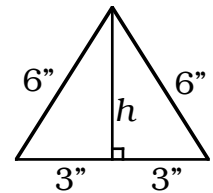
Questions are worth 2-2-2-4-4 points respectively.  
Remember your units.



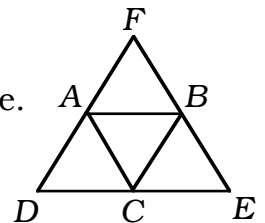
$15\sqrt{3}$  1.  $\sqrt{675} = \sqrt{25 \cdot 27} = \sqrt{25 \cdot 9 \cdot 3} = 5 \cdot 3\sqrt{3}$

$x > -9$  2. When you divide by a negative number, the inequality reverses. Check:  
 $-2(-8) < 18$  and  $-2(-10) > 18$

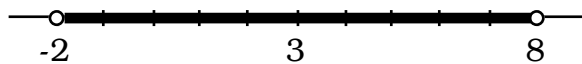
$15.59 \text{ in}^2$  3.  $h = \sqrt{6^2 - 3^2} = 5.196$ ,  $A = \frac{1}{2} \cdot 6 \cdot 5.196 = 15.588 = 15.59$   
 Do not round until the final answer.



$28 \text{ cm}^2$  4. If the sides are twice as large, the area is four times as large.



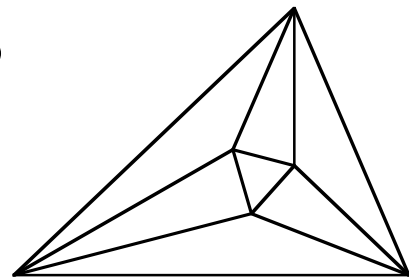
$-2 < x < 8$  5.  $x - 3 < 5$ ,  $x < 8$  or  $x - 3 > -5$ ,  $x > -2$



This means  $x$  is less than 5 units from 3.

# Meet 4 - Event C 2005-2006

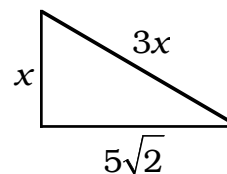
Questions are worth 2-2-2-4-4 points respectively.  
Remember your units.



\_\_\_\_\_ 1. Solve for  $x$ :  $\sqrt{104976} = 4x^2$

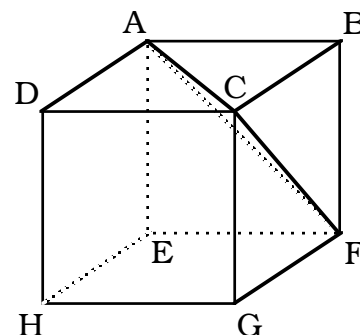
\_\_\_\_\_ 2. The November ad said "20% Off" sale. The December ad said "30% Off the Sale Price." If you bought a sweater in December for \$24.36 with no sales tax, what was the original price?

\_\_\_\_\_ 3. Solve for  $x$  in this right triangle.



\_\_\_\_\_ 4. The total outside surface area of metal forming a can of peaches is  $196.35 \text{ cm}^2$ . If the diameter is 5 cm, what is the height?

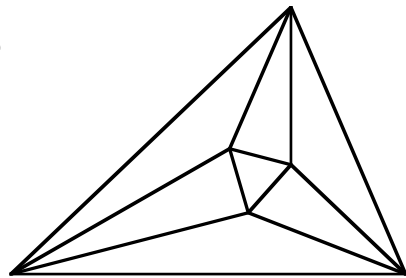
\_\_\_\_\_ 5. In the cube shown, a cut is made going through diagonals  $AC$ ,  $AF$ , and  $CF$  to make a triangular pyramid. If the side of the cube is 6 cm. what is the surface area of the pyramid formed, to one decimal place?



# Meet 4 - Event C 2005-2006

## Answers

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

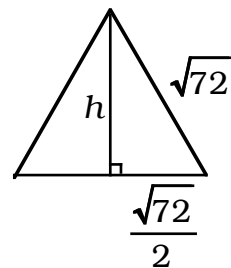


9, -9 1.  $\sqrt{104976} = 324 = 4x^2, 81 = x^2$

\$43.50 2.  $(0.80p)(0.70) = 0.56p = \$24.36$   
 $p = \frac{24.36}{0.56} = \$43.50$

2.5 3.  $x^2 + (5\sqrt{2})^2 = (3x)^2, x^2 + 50 = 9x^2, 50 = 8x^2, x^2 = 6.25, x = 2.5$

10 cm 4.  $196.35 = \pi(5)h + 2\pi(2.5)^2$   
 $196.35 = 15.71h + 39.27$   
 $157.08 = 15.71h$   
 $h = 9.998 = 10 \text{ cm}$



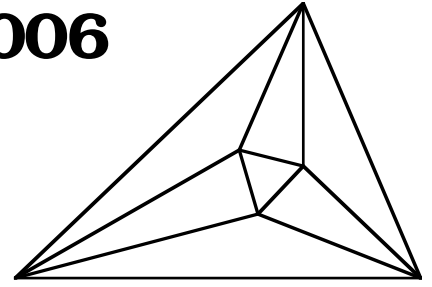
85.2 cm<sup>2</sup> 5.  $3\left(\frac{1}{2} \cdot 6 \cdot 6\right) = 54\text{cm}^2$  for the right triangles.  $\triangle ACF$  is equilateral with sides

of  $\sqrt{6^2 + 6^2} = \sqrt{72}, h = \sqrt{\left((\sqrt{72})^2 - \left(\frac{\sqrt{72}}{2}\right)^2\right)} = \sqrt{72 - 18} = \sqrt{54}$

$A_{\text{of large triange}} = \frac{1}{2}(\sqrt{72})(\sqrt{54}) = 31.1769, A_{\text{Total}} = 54 + 31.1769 = 85.1769$

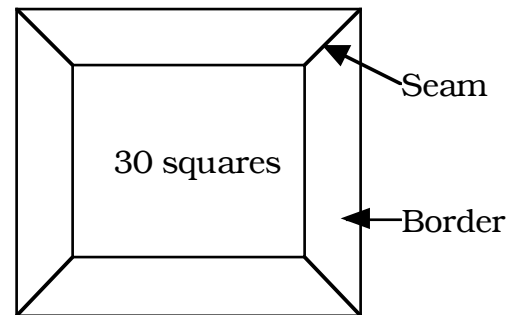
# Meet 4 - Team Event 2005-2006

Questions are worth 4 points each.  
Remember your units.



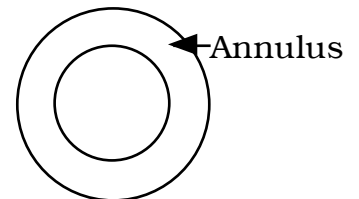
- \_\_\_\_\_ 1. Write  $2 \leq x \leq 4$  as an absolute value inequality.
- \_\_\_\_\_ 2. For a quilt, Marlys wanted green rectangles  $2 \frac{1}{4}$  " by  $3 \frac{1}{2}$  " and red rectangles that were similar, but with twice the area. What are the dimensions of the red rectangles, to the nearest  $\frac{1}{8}$  of an inch?
- \_\_\_\_\_ 3. Marlys is making a quilt 5 squares by 6 squares with each square 12" on one edge. The 4 inch wide border around the edge of the quilt will be blue. If the blue border of the quilt will be cut  $4 \frac{1}{2}$ " wide, to allow for seams and the fabric is 44" wide, what is the smallest length of fabric she must buy, rounding up to the nearest  $\frac{1}{8}$  yard.

- \_\_\_\_\_ 4. In problem 3, Marlys wants no seams in the border except at the corners. What length of blue fabric does she need to do this, rounding to the nearest  $\frac{1}{8}$  yard.



- \_\_\_\_\_ 5. Simplify:  $\sqrt{142560}$

- \_\_\_\_\_ 6. A circle of diameter 6 cm is inside a circle of diameter 10 cm. What is the area of the annulus, in terms of  $\pi$ ?



- \_\_\_\_\_ 7. Solve for  $x$ :  $3(x - 4) > 4(7 - 3x)$  as a quotient of relatively prime numbers.
- \_\_\_\_\_ 8. The diameter of a metal rod is 1 cm and the length is 1 m. What is the total surface area in scientific notation (to three significant figures)?
- \_\_\_\_\_ 9. The pattern for the 12"x12" quilt square needs to be reduced to be a 10"x10" square. What setting on the copy machine would do this?
- \_\_\_\_\_ 10. The isosceles right triangle needed an hypotenuse of 5". What was the length of one leg, to the nearest  $\frac{1}{8}$  "?

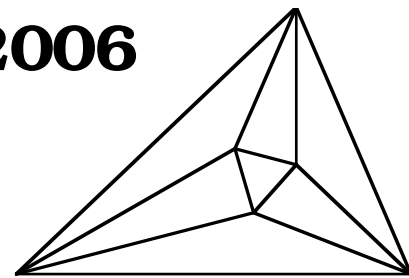
# Meet 4 - Team Event

# 2005-2006

## Answers

Questions are worth 4 points each.

Remember your units.



$|x - 3| \leq 1$  1.  $\frac{2+4}{2} = 3$  and  $11 - 3 = 8$  so  $|x - 3| \leq 1$

$3\frac{1}{8} \times 5$  2. The areas relate as the square of the sides, so  $x^2 = 2$ ,  $x = \sqrt{2}$   
 $2.25 \times \sqrt{2} = 3.18 \sim 3\frac{1}{8}$ ,  $3.5 \times \sqrt{2} = 4.95 \sim 5$

$\frac{7}{8}$  yard 3. The total border length =  $2(5 \times 12" + 8") + 2(6 \times 12") = 280"$   
 $280" / 44" = 6.36$  or 7 strips across the fabric.  $7 \times 4.5" = 31.5"$ ,  
 $31.5 / 36 = 0.875 = 7/8$  yard

$2\frac{1}{4}$  yards 4.  $6 \times 12" + 8" = 80"$  on the longest side, plus  $1/2'$  for seams.  
 $80.5" / 36" = 2.236 \sim 2.25$  yds

$36\sqrt{110}$  5.  $\sqrt{142560} = \sqrt{2 \cdot 5 \cdot 11 \cdot 16 \cdot 81} = 4 \cdot 9 \sqrt{110}$

$16\pi \text{ cm}^2$  6.  $r_1 = 5\text{cm}$ ,  $r_2 = 3\text{cm}$ ,  $A_1 = 25\pi$ ,  $A_2 = 9\pi$ ,  $25\pi - 9\pi = 16\pi \text{ cm}^2$

$x > \frac{8}{3}$  7.  $3x - 12 > 28 - 12x$ ,  $15x - 12 > 28$ ,  $15x > 40$ ,  $x > 40/15 = 8/3$

$3.16 \times 10^2 \text{ cm}^2$  8. Ends:  $2\left(\pi(0.5)^2\right) = 1.57\text{cm}^2$ , Lateral area:  $2\pi(0.5)100 = 314.16\text{cm}^2$   
or  $3.16 \times 10^4 \text{ m}^2$

0.83 9.  $\frac{10}{12} = 0.\overline{83}$ , so use 0.83

$3\frac{1}{2}$  inches 10.  $x^2 + x^2 = 5^2$ ,  $2x^2 = 25$ ,  $x^2 = 12.5$ ,  $x = \sqrt{12.5} = 3.535$

(Yes, I am enjoying a new hobby of quilting!)