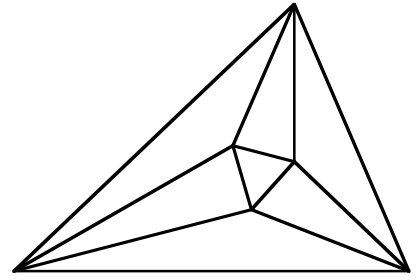
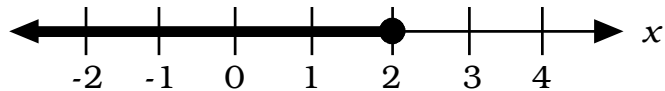


Meet 4 - Event A 2006-2007

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



_____ 1. Write the inequality graphed below:



_____ 2. Solve for x : $12 - 4x > 36$.

_____ 3. Simplify: $\sqrt{605}$.

_____ 4. If the diagonal of a rectangle is 5 cm and one side is 3 cm, what is the area?

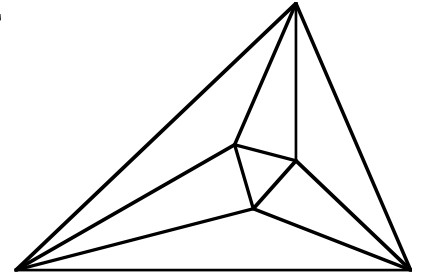
_____ % 5. Xou Xiong's property taxes went up 8% in 2000, 10% in 2001, and 12% in 2002. Then in 2003, they went down 2%. What is the overall percent change from 1999, to the nearest tenth?

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Meet 4 - Event A 2006-2007

Answers

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

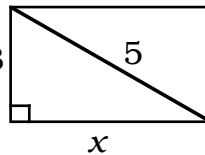


$x \leq 2$ 1. $x \leq 2$

$x < -6$ 2. $12 - 4x > 36, -4x > 24, x < -6$ or
 $12 > 36 + 4x, -24 > 4x, -6 > x$

$11\sqrt{5}$ 3. $\sqrt{605} = \sqrt{5 \cdot 121} = 11\sqrt{5}$

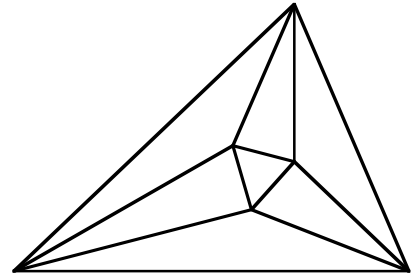
12 cm^2 4. $x^2 = 5^2 - 3^2 = 25 - 9 = 16, x = 4$
 $A = 3 \text{ cm} \times 4 \text{ cm} = 12 \text{ cm}^2$



30.4% 5. $A(1.08)(1.10)(1.12)(0.98) = A(1.30395)$
Increase = $30.395 = 30.4\%$

Meet 4 - Event B 2006-2007

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

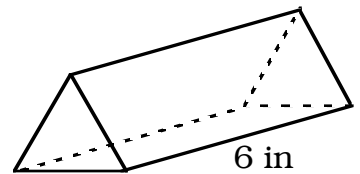


_____ 1. Triangle $ABC \sim$ triangle DEF . If $AC = 10$ cm, $AB = 8$ cm, and $DE = 4$ cm, find DF .

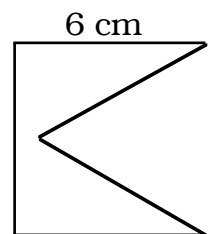
$c =$ _____ 2. Solve for c : $a\sqrt{b} = \sqrt{c}$.

_____ 3. Solve for x : $2(x - 3) < 10$.

_____ 4. A glass prism is an equilateral triangle on one end and is 6 inches long. The perimeter of the triangle is 3 inches. What is the total surface area of the prism, exactly?



_____ 5. Given a square with an equilateral triangle removed. If the square has a side of 6 cm, what is the area of the figure, exactly?

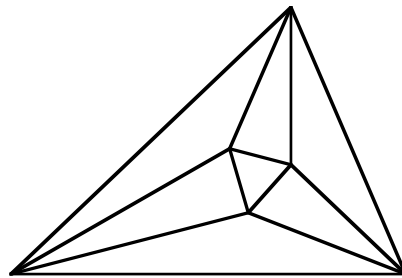


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Meet 4 - Event B 2006-2007

Answers

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



5 cm 1. Vertex A corresponds to vertex D , B to E , and C to F .

$$\frac{AC}{DF} = \frac{AB}{DE}, \quad \frac{10}{x} = \frac{8}{4}, \quad x = 5$$

$c = a^2b$ 2. $a\sqrt{b} = \sqrt{a^2b} = \sqrt{c}$ so $c = a^2b$

$x < 8$ 3. $2x - 6 < 10$, $2x < 16$, $x < 8$

$$\left(\frac{\sqrt{3}}{2} + 18\right) \text{in}^2$$

or $\frac{36 + \sqrt{3}}{2} \text{in}^2$

Side of triangle = $\frac{1}{3}(3) = 1$ in. Area of triangle = $\frac{\sqrt{3}}{4} \text{in}^2$

Lateral area = $3(6) = 18 \text{in}^2$ Total surface area = $2\left(\frac{\sqrt{3}}{4}\right) + 18 = \left(\frac{\sqrt{3}}{2} + 18\right) \text{in}^2$

$$(36 - 9\sqrt{3}) \text{cm}^2$$

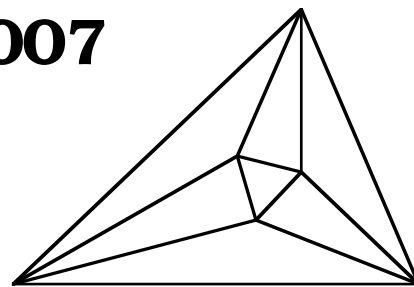
or $9(4 - \sqrt{3}) \text{cm}^2$

Area of square = $6^2 = 36 \text{cm}^2$, Area of triangle = $\frac{6^2\sqrt{3}}{4} = \frac{36\sqrt{3}}{4} = 9\sqrt{3} \text{cm}^2$

Area of figure = $(36 - 9\sqrt{3}) \text{cm}^2$

Meet 4 - Team Event 2006-2007

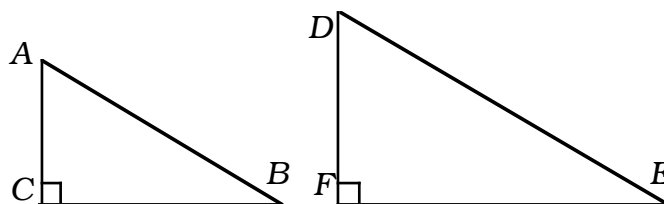
Questions are worth 4 points each.
Remember your units.



_____ 1. Compute the four digit positive number, N , whose square root is three times the sum of the digits of N . (ARML 2006)

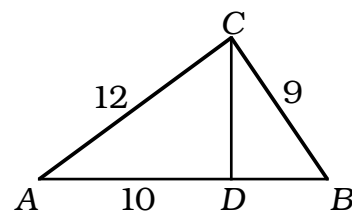
_____ 2. Solve for x as a quotient of relatively prime numbers: $|3x + 5| > 20$

_____ 3. Right triangle ABC is similar to triangle DEF . If $AC=3$ cm, $BC=5$ cm, and $DF=8$ cm, find the length of DE to the nearest hundredth.



_____ 4. Triangles ABC and ACD are similar. If $AD=10$ in, $AC=12$ in, and $BC=9$ in, find CD .

_____ 5. In the diagram for problem 4, if $AD=20$ in, and $AC=25$ in, find AB .



_____ 6. If the area of a right triangle is 10 cm^2 and one leg is 2 cm, find the length of the hypotenuse as a simplified radical.

_____ 7. The outside measurements of a hollow rectangular prism are 3 ft by 2 ft by 2.5 ft. If the walls of the prism are $\frac{1}{2}$ inch thick, what is the surface area of the inside of the prism, to the nearest whole number?

_____ 8. A metal rod has a total surface area of 113.49 square inches and a diameter of 0.5 inches. How long is the rod?

_____ 9. Simplify: $\sqrt{14256}$.

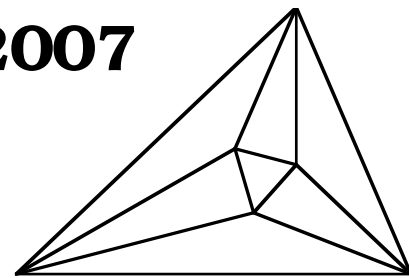
_____ 10. Solve for x : $|x - 5| < 7$

Meet 4 - Team Event

2006-2007

Answers

Questions are worth 4 points each.
Remember your units.



2916 1. If $\sqrt{N} = 3d$, then $N = 9d^2$, and N is divisible by 9, so $d = 9t$ and $N = 9(9t)^2 = 729t^2$. For $t=1$: $N = 729$ which is only 3 digits. For $t=2$: $N = 729(2)^2 = 2916$ so $\sqrt{2916} = 54 = 3(2+9+1+6)$, which is true. For $t=3$: $N = 6561$ so $\sqrt{6561} = 81 = 3(6+5+6+1) = 54$ is false. So $N=2916$.

$x > 5$ or $x < -\frac{25}{3}$ 2. $3x+5 > 20$, $3x > 15$, $x > 5$ $3x+5 < -20$, $3x < -25$, $x < -25/3$
or $x > 5$, $x < -\frac{25}{3}$ NOT: $-25/3 > x > 5$ NOT: $x > 5$ and $x < -25/3$

15.55 cm 3. $AB = \sqrt{3^2 + 5^2} = \sqrt{34}$, $\frac{3}{8} = \frac{\sqrt{34}}{DE}$, $DE = 15.549$

7.5 in 4. $\frac{AC}{AD} = \frac{BC}{CD}$, $\frac{12}{10} = \frac{9}{x}$, $x = 7.5$

31.25 in 5. $\frac{AC}{AD} = \frac{AB}{AC}$, $\frac{25}{20} = \frac{x}{25}$, $x = 31.25$

$2\sqrt{26}$ cm 6. $10 = \frac{1}{2}(2)h$, $h = 10$ so the legs are 2 and 10 cm. Hypotenuse = $\sqrt{2^2 + 10^2} = \sqrt{104} = \sqrt{4 \cdot 26}$

4974 in^2 7. $3 \text{ ft} - 0.5 \text{ in} - 0.5 \text{ in} = 35 \text{ in}$, $2 \text{ ft} - 1 \text{ in} = 23 \text{ in}$, $2.5 \text{ ft} = 30 \text{ in} - 1 \text{ in} = 29 \text{ in}$
or 35 ft^2 $2(29 \times 23) + 2(23 \times 35) + 2(29 \times 35) = 4974 \text{ in}^2$

72 in 8. $113.49 = 2\pi(0.25)^2 + 2\pi(0.25)h = 0.39 + 1.57h$, $113.1 = 1.57h$, $h = 72 \text{ in}$
or 6 ft or 2 yd

$36\sqrt{11}$ 9. $\sqrt{14256} = \sqrt{4 \cdot 4 \cdot 9 \cdot 9 \cdot 11} = 4 \cdot 9 \sqrt{11}$

$-2 < x < 12$ 10. $x - 5 < 7$, $x < 12$, $x - 5 > -7$, $x > -2$
or $x < 12$ and $x > -2$ NOT: $x < 12$ or $x > -2$