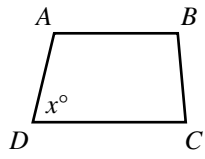
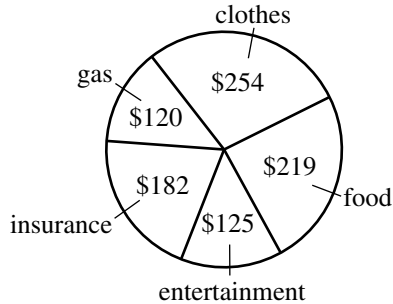




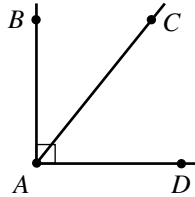
15. This month, Kami sold 70 figurines in 2 sizes. The large figurines sold for \$12 each, and the small figurines sold for \$8 each. The amount of money he received from the sales of the large figurines was equal to the amount of money he received from the sales of the small figurines. How many large figurines did Kami sell this month?
- A. 20  
B. 28  
C. 35  
D. 42  
E. 50
16. A car accelerated from 88 feet per second (fps) to 220 fps in exactly 3 seconds. Assuming the acceleration was constant, what was the car's acceleration, in feet per second per second, from 88 fps to 220 fps ?
- F.  $\frac{1}{44}$   
G.  $29\frac{1}{3}$   
H. 44  
J.  $75\frac{1}{3}$   
K.  $102\frac{2}{3}$
17. In a plane, the distinct lines  $\overleftrightarrow{AB}$  and  $\overleftrightarrow{CD}$  intersect at  $A$ , where  $A$  is between  $C$  and  $D$ . The measure of  $\angle BAC$  is  $47^\circ$ . What is the measure of  $\angle BAD$  ?
- A.  $43^\circ$   
B.  $47^\circ$   
C.  $94^\circ$   
D.  $133^\circ$   
E.  $137^\circ$
18. In which of the following are  $\frac{1}{2}$ ,  $\frac{5}{6}$ , and  $\frac{5}{8}$  arranged in ascending order?
- F.  $\frac{1}{2} < \frac{5}{8} < \frac{5}{6}$   
G.  $\frac{5}{6} < \frac{1}{2} < \frac{5}{8}$   
H.  $\frac{5}{6} < \frac{5}{8} < \frac{1}{2}$   
J.  $\frac{5}{8} < \frac{1}{2} < \frac{5}{6}$   
K.  $\frac{5}{8} < \frac{5}{6} < \frac{1}{2}$
19. In scientific notation,  $670,000,000 + 700,000,000 = ?$
- A.  $1.37 \times 10^{-9}$   
B.  $1.37 \times 10^7$   
C.  $1.37 \times 10^8$   
D.  $1.37 \times 10^9$   
E.  $137 \times 10^{15}$
20. For trapezoid  $ABCD$  shown below,  $\overline{AB} \parallel \overline{DC}$ , the measures of the interior angles are distinct, and the measure of  $\angle D$  is  $x^\circ$ . What is the degree measure of  $\angle A$  in terms of  $x$  ?
- F.  $(180 - x)^\circ$   
G.  $(180 - 0.5x)^\circ$   
H.  $(180 + 0.5x)^\circ$   
J.  $(180 + x)^\circ$   
K.  $x^\circ$
- 
21. To get a driver's license, an applicant must pass a written test and a driving test. Past records show that 80% of the applicants pass the written test and 60% of those who have passed the written test pass the driving test. Based on these figures, how many applicants in a random group of 1,000 applicants would you expect to get driver's licenses?
- A. 200  
B. 480  
C. 600  
D. 750  
E. 800
22. If  $a$ ,  $b$ , and  $c$  are positive integers such that  $a^b = x$  and  $c^b = y$ , then  $xy = ?$
- F.  $ac^b$   
G.  $ac^{2b}$   
H.  $(ac)^b$   
J.  $(ac)^{2b}$   
K.  $(ac)^{b^2}$
23. Which of the following expressions is equivalent to  $\frac{1}{2}y^2(6x + 2y + 12x - 2y)$  ?
- A.  $9xy^2$   
B.  $18xy$   
C.  $3xy^2 + 12x$   
D.  $9xy^2 - 2y^3$   
E.  $3xy^2 + 12x - y^3 - 2y$
24. An artist makes a profit of  $(500p - p^2)$  dollars from selling  $p$  paintings. What is the fewest number of paintings the artist can sell to make a profit of at least \$60,000 ?
- F. 100  
G. 150  
H. 200  
J. 300  
K. 600



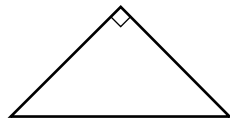
25. Last month, Lucie had total expenditures of \$900. The pie chart below breaks down these expenditures by category. The category in which Lucie's expenditures were greatest is what percent of her total expenditures, to the nearest 1%?



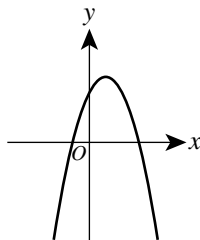
- A. 24%  
 B. 28%  
 C. 32%  
 D. 34%  
 E. 39%
26. In the figure shown below, the measure of  $\angle BAC$  is  $(x + 20)^\circ$  and the measure of  $\angle BAD$  is  $90^\circ$ . What is the measure of  $\angle CAD$ ?



- F.  $(x - 70)^\circ$   
 G.  $(70 - x)^\circ$   
 H.  $(70 + x)^\circ$   
 J.  $(160 - x)^\circ$   
 K.  $(160 + x)^\circ$
27. What is the perimeter, in inches, of the isosceles right triangle shown below, whose hypotenuse is  $8\sqrt{2}$  inches long?



- A. 8  
 B.  $8 + 8\sqrt{2}$   
 C.  $8 + 16\sqrt{2}$   
 D. 16  
 E.  $16 + 8\sqrt{2}$
28. The equation  $y = ax^2 + bx + c$  is graphed in the standard  $(x,y)$  coordinate plane below for real values of  $a$ ,  $b$ , and  $c$ . When  $y = 0$ , which of the following best describes the solutions for  $x$ ?



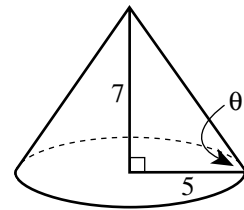
- F. 2 distinct positive real solutions  
 G. 2 distinct negative real solutions  
 H. 1 positive real solution and 1 negative real solution  
 J. 2 real solutions that are not distinct  
 K. 2 distinct solutions that are not real

29. What is the product of the complex numbers  $(-3i + 4)$  and  $(3i + 4)$ ?

- A. 1  
 B. 7  
 C. 25  
 D.  $-7 + 24i$   
 E.  $7 + 24i$

30. The radius of the base of the right circular cone shown below is 5 inches, and the height of the cone is 7 inches. Solving which of the following equations gives the measure,  $\theta$ , of the angle formed by a slant height of the cone and a radius?

- F.  $\tan \theta = \frac{5}{7}$   
 G.  $\tan \theta = \frac{7}{5}$   
 H.  $\sin \theta = \frac{5}{7}$   
 J.  $\sin \theta = \frac{7}{5}$   
 K.  $\cos \theta = \frac{7}{5}$



31. To make a 750-piece jigsaw puzzle more challenging, a puzzle company includes 5 extra pieces in the box along with the 750 pieces, and those 5 extra pieces do not fit anywhere in the puzzle. If you buy such a puzzle box, break the seal on the box, and immediately select 1 piece at random, what is the probability that it will be 1 of the extra pieces?

- A.  $\frac{1}{5}$   
 B.  $\frac{1}{755}$   
 C.  $\frac{1}{750}$   
 D.  $\frac{5}{755}$   
 E.  $\frac{5}{750}$

32. What fraction lies exactly halfway between  $\frac{2}{3}$  and  $\frac{3}{4}$ ?

- F.  $\frac{3}{5}$   
 G.  $\frac{5}{6}$   
 H.  $\frac{7}{12}$   
 J.  $\frac{9}{16}$   
 K.  $\frac{17}{24}$