

## SECTION 8

Time – 20 minutes

16 Questions

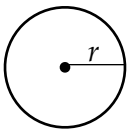
Turn to Section 5 of your answer sheet to answer the questions in this section.

**Directions:** For this section, solve each problem and decide which is the best of the choices given. Fill in the corresponding circle on the answer sheet. You may use any available space for scratch work.

Notes

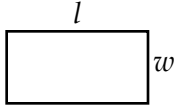
- The use of calculator is permitted.
- All numbers used are real numbers.
- Figures that accompany problems in this test are intended to provide information useful in solving the problems. They are drawn as accurately as possibly EXCEPT when it is stated in a specific problem that the figure is not drawn to scale. All figures lie in a plane unless otherwise indicated.
- Unless otherwise specified, the domain of any function  $f$  is assumed to be the set of all real numbers  $x$  for which  $f(x)$  is a real number.

Reference Information

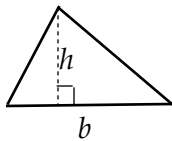


$$A = \pi \cdot r^2$$

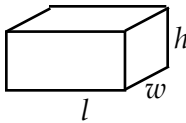
$$C = 2 \cdot \pi \cdot r$$



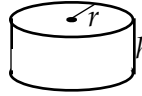
$$A = l \cdot w$$



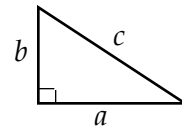
$$A = \frac{1}{2} b \cdot h$$



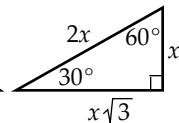
$$V = l \cdot w \cdot h$$



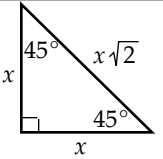
$$V = \pi \cdot r^2 \cdot h$$



$$c^2 = a^2 + b^2$$



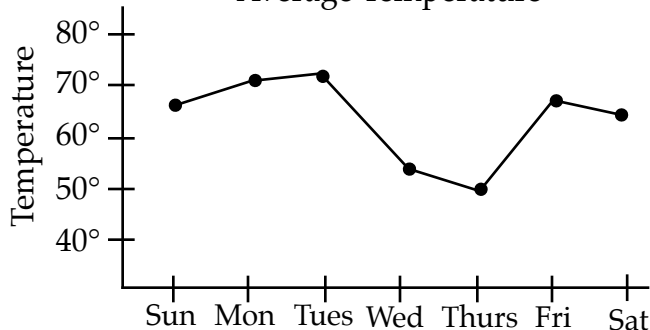
Special Right Triangles



The number of degrees of arc in a circle is 360.

The sum of the measures in degrees of the angles of a triangle is 180.

Average Temperature



- According to the graph above, the greatest increase in temperature occurred between which two consecutive days?

- Sunday and Monday
- Tuesday and Wednesday
- Wednesday and Thursday
- Thursday and Friday
- Friday and Saturday

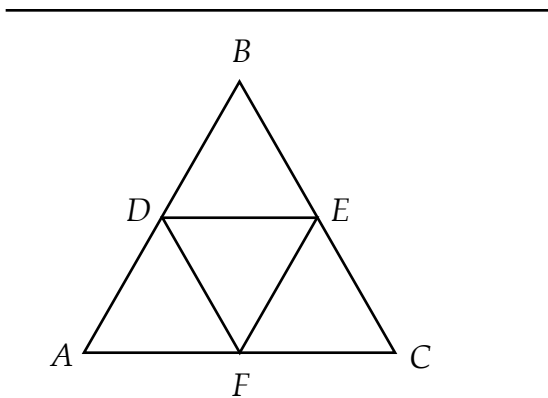
- Which of the following value is equivalent to 4,863,129 ?

- $4.863129 \times 10^{-6}$
- $4.863129 \times 10^{-5}$
- $4.863129 \times 10^5$
- $4.863129 \times 10^6$
- $48.63129 \times 10^7$

GO ON THE THE NEXT PAGE

3. In a certain game, players spell words and receive various points for each letter played. If consonants are worth 4 points each and vowels are worth 2 points each, how many more points does a player receive by playing "planets" than "car" ?

(A) 6  
 (B) 8  
 (C) 10  
 (D) 14  
 (E) 24

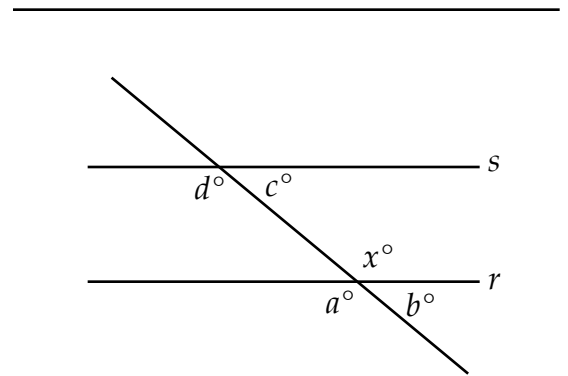


4.  $\triangle ABC$  and  $\triangle DEF$  are both equilateral triangles.  $D$  is the midpoint of  $AB$ ,  $E$  is the midpoint of  $BC$ , and  $F$  is the midpoint of  $AC$ . If the perimeter of  $\triangle ABC$  is 36, what is the perimeter of  $\triangle DEF$ .

(A) 28  
 (B) 24  
 (C) 20  
 (D) 18  
 (E) 16

5. If the ratio of  $a$  to  $b$  is 2 to 3, and the ratio of  $b$  to  $c$  is 5 to 6, what is the ratio of  $a$  to  $c$  ?

(A) 1 to 1  
 (B) 1 to 2  
 (C) 1 to 3  
 (D) 3 to 5  
 (E) 5 to 9



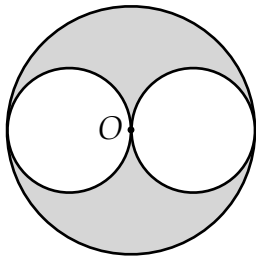
6. In the figure above, line  $r$  is parallel to line  $s$ . What is the value of  $a + b + c + d$  in terms of  $x$  ?

(A)  $2x$   
 (B)  $180 - x$   
 (C)  $180 - 2x$   
 (D)  $360 - x$   
 (E)  $540 - 2x$

7. Which of the following is the solution set of the equation  $3|2x + 4| = 36$

(A) {4}  
 (B) {-8}  
 (C) {-8, 4}  
 (D) {-4, 8}  
 (E) {4, 8}

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8. The two smaller circles are inscribed within the larger circle and are both tangent to Point O, the center of the larger circle. If the radius of both smaller circles is 2, what is the area of the shaded region?

(A)  $4\pi$   
 (B)  $8\pi$   
 (C)  $12\pi$   
 (D)  $24\pi$   
 (E)  $32\pi$

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9. If  $f(a,b) = a^2 + 2b - 4$ , what is  $f(6,4) - f(2,3)$ ?

(A) 18  
 (B) 24  
 (C) 28  
 (D) 32  
 (E) 34

10. If  $x \neq 2$ , and  $\frac{x^2 + 5x - 14}{x - 2} < 3$ , which of the

following gives all values of  $x$ ?

(A)  $x < -7$   
 (B)  $x < -4$   
 (C)  $x < 4$   
 (D)  $-4 < x < 7$   
 (E)  $-7 < x < 4$

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11. A high school play is being held in the high school auditorium. In the auditorium there are  $r$  rows with  $s$  seats in each row. If only  $p$  people came, how many empty seats were there in the auditorium for the play?

(A)  $\frac{r}{sp}$   
 (B)  $\frac{sp}{r}$   
 (C)  $rsp$   
 (D)  $rs - p$   
 (E)  $rp - s$

12. Jackie opened a savings account that earned 10% interest every year. If Jackie deposited  $d$  dollars into the account four years ago, and has not deposited or withdrawn any money since, how much money is in her account now in terms of  $d$ ?

(A)  $1.1d$   
 (B)  $1.21d$   
 (C)  $1.331d$   
 (D)  $1.4d$   
 (E)  $4d$

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13. If  $x > 0$ , which is equal to  $(x^{\frac{3}{2}})(x^{\frac{2}{3}})$ ?

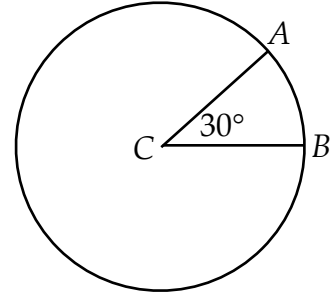
(A)  $x^{\frac{1}{4}}$   
 (B)  $x^{\frac{1}{2}}$   
 (C)  $x$   
 (D)  $x^{\frac{5}{4}}$   
 (E)  $x^{\frac{13}{6}}$

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14. If  $x^2 - y^2 = 0$ , which of the following MUST be true?

I.  $x = y$   
 II.  $x = 0$   
 III.  $x = -y$

(A) I only  
 (B) I and II  
 (C) I and III  
 (D) III only  
 (E) I, II, and III



15. In the circle with center  $C$ , the length of minor arc  $AB$  is 5. What is the perimeter of sector  $ACB$ ?

(A)  $5 + \frac{30}{\pi}$   
 (B)  $5 + \frac{60}{\pi}$   
 (C) 15  
 (D) 45  
 (E) 60

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16. If  $x$  is divisible by 3, 4 and 5, what else is divisible by these same numbers in terms of  $x$ ?

(A)  $x + 10$   
 (B)  $x + 15$   
 (C)  $x + 20$   
 (D)  $x + 45$   
 (E)  $x + 60$

