

# Chapter Standardized Test

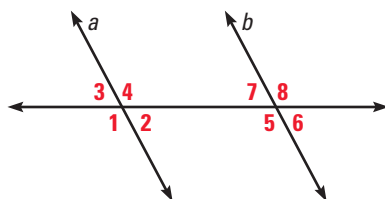
**TEST-TAKING STRATEGY** The mathematical portion of the SAT is based on the material taught in your high school mathematics courses. One of the best ways to prepare for the SAT is to keep up with your regular studies and do your homework assignments.

1. **MULTIPLE CHOICE** In the diagram, how many lines can be drawn through point  $Q$  parallel to line  $n$ ?

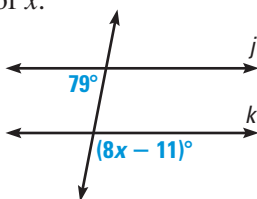


- (A) 0                      (B) 1  
(C) 2                      (D) More than 2  
(E) Cannot be determined

2. **MULTIPLE CHOICE** In the diagram, if  $a \parallel b$  and  $m\angle 7 = 62^\circ$ , what is  $m\angle 1$ ?



- (A)  $28^\circ$                       (B)  $62^\circ$   
(C)  $118^\circ$                       (D)  $124^\circ$   
(E)  $128^\circ$
3. **MULTIPLE CHOICE** In the diagram,  $j \parallel k$ . Find the value of  $x$ .



- (A) 11                      (B) 11.25  
(C) 14                      (D) 15.25  
(E) 23
4. **MULTIPLE CHOICE** Which line passes through the point  $(10, -1)$  and has a slope of  $-2$ ?
- (A)  $y = -2x - 19$                       (B)  $y = 2x - 19$   
(C)  $y = 2x + 19$                       (D)  $y = -2x + 19$   
(E)  $y = -2x - 21$

5. **QUANTITATIVE COMPARISON**

Column A	Column B
The slope of the line through $(-2, -4)$ and $(8, 3)$	The slope of the line perpendicular to $y = \frac{10}{7}x + \frac{1}{7}$

Choose the statement that is true.

- (A) The quantity in column A is greater.  
(B) The quantity in column B is greater.  
(C) The two quantities are equal.  
(D) The relationship cannot be determined from the information given.

6. **MULTIPLE CHOICE** Which of the following lines is parallel to  $y = -\frac{5}{7}x + 2$ ?

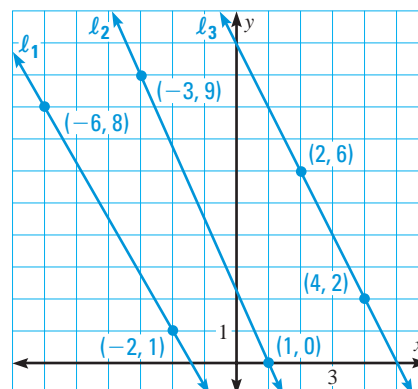
- (A)  $y + \frac{5}{7}x = -5$                       (B)  $y = \frac{5}{7}x + 6$   
(C)  $y = -\frac{7}{5}x - 3$                       (D)  $y - \frac{5}{7}x = 9$   
(E)  $y = \frac{7}{5}x + 1$

7. **MULTIPLE CHOICE** A line  $j$  has equation  $y = -\frac{1}{4}x - 6$ . If  $k \perp j$  and  $k$  passes through point  $(5, -2)$ , what is an equation of  $k$ ?

- (A)  $y = 4x + 22$                       (B)  $y = \frac{1}{4}x - 22$   
(C)  $y = -\frac{1}{4}x - 22$                       (D)  $y = 4x - 22$   
(E)  $y = -4x + 18$

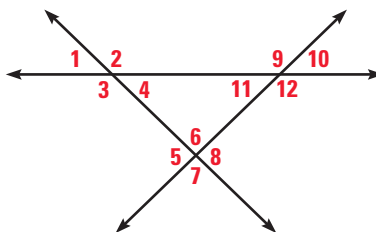
8. **MULTIPLE CHOICE** Which lines are parallel?

- (A)  $\ell_1 \parallel \ell_2$   
(B)  $\ell_2 \parallel \ell_3$   
(C)  $\ell_1 \parallel \ell_3$   
(D) None  
(E) All 3



**9. MULTIPLE CHOICE** In the diagram, which two angles are alternate interior angles?

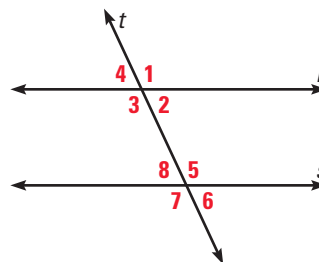
- (A)  $\angle 6$  and  $\angle 3$
- (B)  $\angle 10$  and  $\angle 5$
- (C)  $\angle 12$  and  $\angle 8$
- (D)  $\angle 2$  and  $\angle 6$
- (E)  $\angle 10$  and  $\angle 11$



**MULTI-STEP PROBLEM** In Exercises 10 and 11, use the diagram at the right.

**10.** Suppose  $r \parallel s$ . Complete each statement with the word *always*, *sometimes*, or *never*.

- a. If  $r \perp t$ , then  $s$  is      perpendicular to  $t$ .
- b.  $\angle 3$  and  $\angle 8$  are      both acute angles.
- c.  $\angle 1$  and  $\angle 6$  are      supplementary angles.
- d.  $\angle 2$  and  $\angle 7$  are      congruent angles.



**11.** Given  $m\angle 4 = 65^\circ$  and  $m\angle 5 = 115^\circ$ , write two different paragraph proofs to show that  $r \parallel s$ .

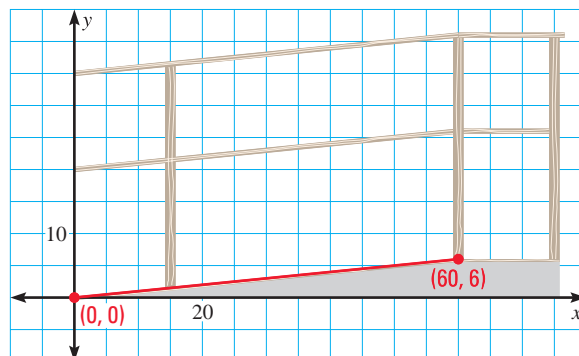
**MULTI-STEP PROBLEM** Line  $j$  has equation  $y = 3x - 2$ .

- 12.** Write an equation for line  $k$  that is perpendicular to line  $j$  and passes through point  $(1, 1)$ .
- 13.** Write an equation for a line  $n$  that is perpendicular to line  $k$  and passes through point  $(4, 0)$ .
- 14.** Describe two different ways you could show that  $j \parallel n$ .
- 15.** Graph lines  $j$ ,  $k$ , and  $n$  in a coordinate plane.

**MULTI-STEP PROBLEM** In Exercises 16 and 17, use the following information.

Suppose you are constructing a wheelchair ramp. The building code requires the slope of the ramp to be no greater than  $\frac{1}{12}$ . The diagram at the right shows a side view of the ramp in a coordinate plane, where each unit represents one inch.

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- 16. Writing** Explain what is wrong with the slope of the ramp in the diagram.
- 17.** Keeping the height of the ramp at 6 inches, how much longer must the base of the ramp be in order to meet the slope specification of  $\frac{1}{12}$ ?