CHAPTER 6

Chapter Standardized Test

TEST-TAKING STRATEGY Staying physically relaxed during the SAT is very important. If you find yourself tensing up, put your pencil down and take a couple of deep breaths. This will help you stay calm.

1. MULTIPLE CHOICE In $\triangle JKL$, $\overline{JK} \cong \overline{KL} \cong \overline{JL}$. Which statements are true?

I. $\triangle JKL$ is equilateral.

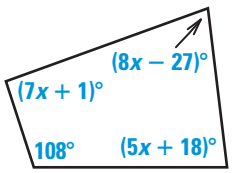
II. $\triangle JKL$ is equiangular.

III. $\triangle JKL$ is regular.

(A) I only (B) II only (C) III only

(D) I, II, and III (E) none of these

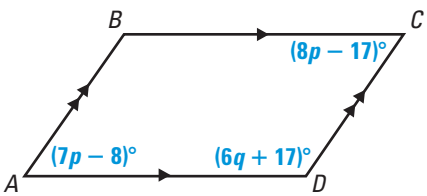
2. MULTIPLE CHOICE Find the value of x.



(A) 7 (B) 11 (C) 13

(D) 15 (E) 23

3. MULTIPLE CHOICE What are the values of the variables in parallelogram $ABCD$?



(A) $p = 8, q = 20$ (B) $p = 11, q = 18$

(C) $p = 9, q = 18$ (D) $p = 10, q = 18$

(E) $p = 9, q = 20$

4. MULTIPLE CHOICE The diagonals of a parallelogram must

(A) be congruent. (B) be parallel.

(C) be perpendicular. (D) bisect each other.

(E) be longer than the sides.

5. MULTIPLE CHOICE What special type of quadrilateral has the vertices $M(3, 4)$, $N(1, -6)$, $P(6, -7)$, and $Q(8, 3)$?

(A) square (B) rhombus (C) rectangle

(D) trapezoid (E) kite

6. MULTIPLE CHOICE $ABCD$ is a quadrilateral. Which information would *not* allow you to conclude that $ABCD$ is a parallelogram?

(A) $\overline{AB} \cong \overline{BC}$ and $\overline{CD} \cong \overline{AD}$

(B) $\overline{AB} \parallel \overline{CD}$ and $\overline{BC} \parallel \overline{AD}$

(C) $\angle A \cong \angle C$, $\angle B \cong \angle D$

(D) $m\angle A = 25°$, $m\angle B = 155°$, $m\angle C = 25°$

(E) $\overline{BC} \cong \overline{AD}$ and $\overline{BC} \parallel \overline{AD}$

7. MULTIPLE CHOICE What special type of quadrilateral has the vertices $R(-5, -7)$, $S(-3, -9)$, $T(-1, -7)$, and $U(-3, 11)$?

(A) parallelogram (B) kite

(C) trapezoid (D) rectangle

(E) rhombus

8. QUANTITATIVE COMPARISON The vertices of two quadrilaterals are given.

Column A	Column B
Area of $JKLM$ for $J(-5, 7)$, $K(7, 7)$, $L(6, -2)$, and $M(-2, -2)$	Area of $PQRS$ for $P(-10, 4)$, $Q(1, 4)$, $R(7, -5)$, and $S(-4, -5)$

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.

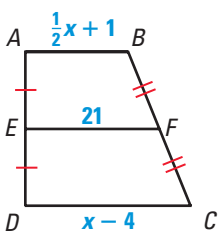
(D) The relationship cannot be determined from the given information.

9. MULTIPLE CHOICE $ABCD$ is a trapezoid and $EF = 21$. Find the value of x.

(A) 18 (B) 23

(C) 25 (D) 30

(E) 33

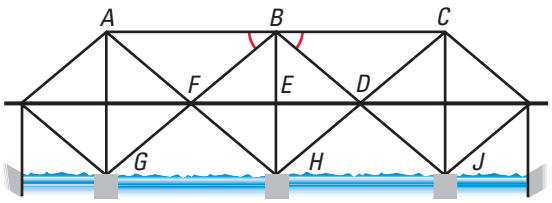


10. MULTIPLE CHOICE Find the area of a triangle with vertices $A(-3, 6)$, $B(-7, -4)$, and $C(6, -4)$.

Ⓐ 39 square units Ⓑ 52 square units Ⓒ 60 square units

Ⓓ 65 square units Ⓔ 78 square units

MULTI-STEP PROBLEM In Exercises 11–14, use the following information.
The framework of a railroad bridge is shown below. In the diagram, $\overline{GB} \parallel \overline{HC}$, $\overline{AH} \parallel \overline{BJ}$, and $\angle FBA \cong \angle DBC$.



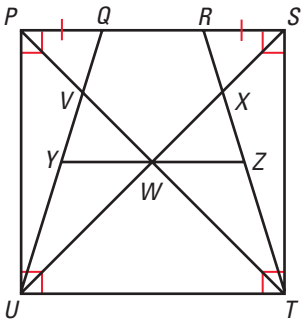
11. Are you given enough information to prove that $\overline{BE} \cong \overline{HE}$? If so, explain how.

12. If $m\angle FBA = 40°$, what are the measures of $\angle BDH$ and $\angle DHF$?

13. Are you given enough information to prove that $\triangle BEF \cong \triangle HED$? If so, write a plan for a proof.

14. Suppose you were given the additional information that $\overline{BH}$ and $\overline{FD}$ are perpendicular. What could you conclude about a special quadrilateral? Explain.

MULTI-STEP PROBLEM In Exercises 15–20, use the given information and the diagram at the right.



GIVEN ▶ $PSTU$ is a rectangle and $\overline{PQ} \cong \overline{SR}$. $\overline{YZ}$ is the midsegment of isosceles trapezoid $QRTU$.

15. $QR = 3x - 10$, $UT = 2x + 3$, and $YZ = 9$. Find the value of x.

16. $PQ = 2y$, $UT = 6y + 1$, and $QR = 5$. Find the value of y.

17. $PT = 3a - 2$ and $UW = 14 - a$. Find the value of a.

18. $UY = 3b + 4$ and $TZ = 4b - 5$. Find the value of b.

19. What kind of polygon is $QRXWV$? Is it convex or concave?

20. Use the given information. Write a two-column proof that shows that $\triangle PQU \cong \triangle SRT$.

MULTI-STEP PROBLEM In Exercises 21 and 22, use the following information.

A *concrete slump test* is used to measure the water content and consistency of concrete mix. Concrete is placed in a mold for a period of time, and then the mold is removed. The distance from the top of the mold to the top of the "slumped" concrete is then evaluated. The shape of the cross section of the slump mold can be modeled by the points $A(4, 12)$, $B(8, 12)$, $C(10, 0)$, and $D(2, 0)$.

21. What special type of quadrilateral is $ABCD$? Describe two different ways that you could prove that your answer is correct.

22. What is the area of the cross section?