

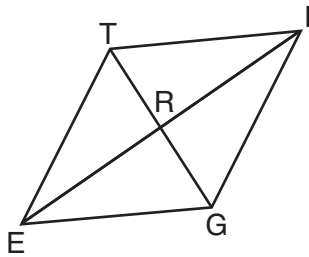
Use this space for  
computations.

16 Which equation represents a line parallel to the line whose equation is  $-2x + 3y = -4$  and passes through the point  $(1,3)$ ?

(1)  $y - 3 = -\frac{3}{2}(x - 1)$       (3)  $y + 3 = -\frac{3}{2}(x + 1)$

(2)  $y - 3 = \frac{2}{3}(x - 1)$       (4)  $y + 3 = \frac{2}{3}(x + 1)$

17 In rhombus  $TIGE$ , diagonals  $\overline{TG}$  and  $\overline{IE}$  intersect at  $R$ . The perimeter of  $TIGE$  is 68, and  $TG = 16$ .



What is the length of diagonal  $\overline{IE}$ ?

- (1) 15      (3) 34  
(2) 30      (4) 52

18 In circle  $O$  two secants,  $\overline{ABP}$  and  $\overline{CDP}$ , are drawn to external point  $P$ . If  $m\widehat{AC} = 72^\circ$ , and  $m\widehat{BD} = 34^\circ$ , what is the measure of  $\angle P$ ?

- (1)  $19^\circ$       (3)  $53^\circ$   
(2)  $38^\circ$       (4)  $106^\circ$

**Use this space for  
computations.**

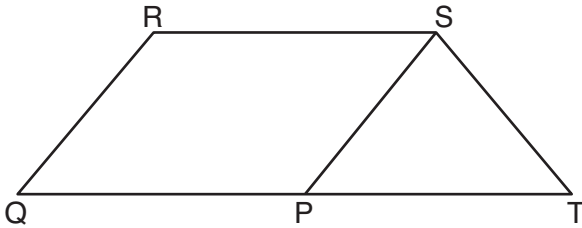
**19** What are the coordinates of point  $C$  on the directed segment from  $A(-8,4)$  to  $B(10,-2)$  that partitions the segment such that  $AC:CB$  is  $2:1$ ?

- (1)  $(1,1)$
- (2)  $(-2,2)$
- (3)  $(2,-2)$
- (4)  $(4,0)$

**20** The equation of a circle is  $x^2 + 8x + y^2 - 12y = 144$ . What are the coordinates of the center and the length of the radius of the circle?

- (1) center  $(4,-6)$  and radius 12
- (2) center  $(-4,6)$  and radius 12
- (3) center  $(4,-6)$  and radius 14
- (4) center  $(-4,6)$  and radius 14

**21** In parallelogram  $PQRS$ ,  $\overline{QP}$  is extended to point  $T$  and  $\overline{ST}$  is drawn.



If  $\overline{ST} \cong \overline{SP}$  and  $m\angle R = 130^\circ$ , what is  $m\angle PST$ ?

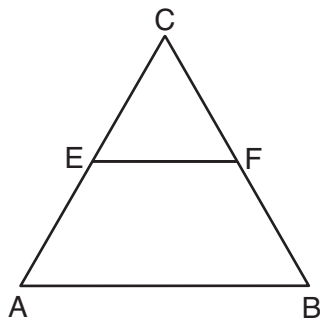
- (1)  $130^\circ$
- (2)  $80^\circ$
- (3)  $65^\circ$
- (4)  $50^\circ$

Use this space for computations.

22 A 12-foot ladder leans against a building and reaches a window 10 feet above ground. What is the measure of the angle, to the nearest *degree*, that the ladder forms with the ground?

- (1) 34 (3) 50  
(2) 40 (4) 56

23 In the diagram of equilateral triangle  $ABC$  shown below,  $E$  and  $F$  are the midpoints of  $\overline{AC}$  and  $\overline{BC}$ , respectively.



If  $EF = 2x + 8$  and  $AB = 7x - 2$ , what is the perimeter of trapezoid  $ABFE$ ?

- (1) 36 (3) 100  
(2) 60 (4) 120

24 Which information is *not* sufficient to prove that a parallelogram is a square?

- (1) The diagonals are both congruent and perpendicular.  
(2) The diagonals are congruent and one pair of adjacent sides are congruent.  
(3) The diagonals are perpendicular and one pair of adjacent sides are congruent.  
(4) The diagonals are perpendicular and one pair of adjacent sides are perpendicular.
-

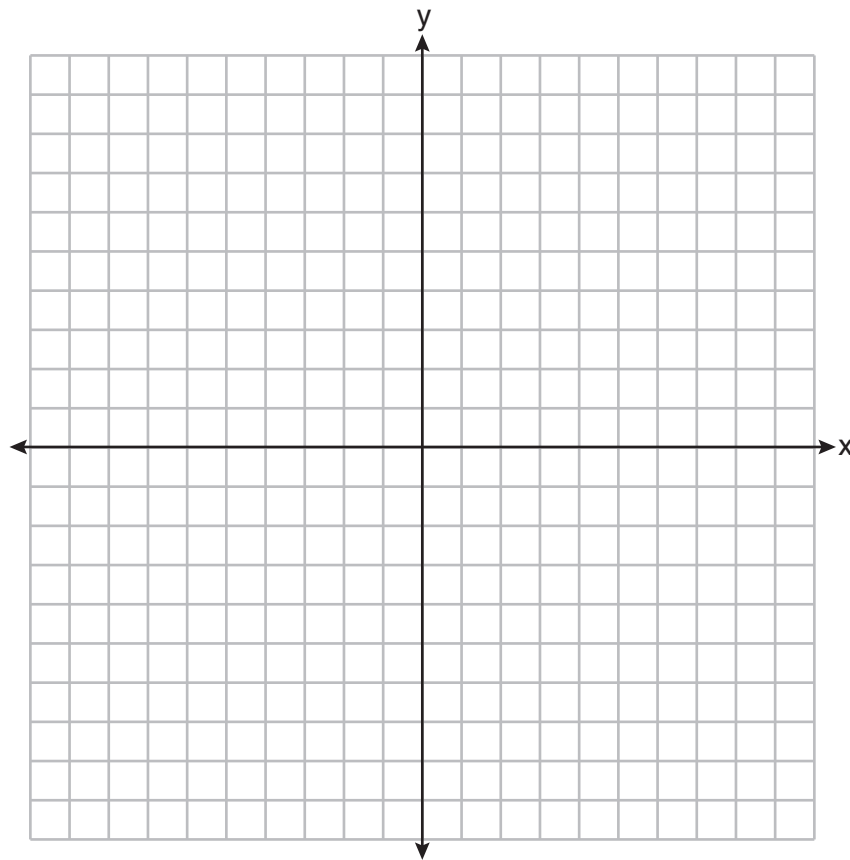
## Part II

Answer all 7 questions in this part. Each correct answer will receive 2 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. Utilize the information provided for each question to determine your answer. Note that diagrams are not necessarily drawn to scale. For all questions in this part, a correct numerical answer with no work shown will receive only 1 credit. All answers should be written in pen, except for graphs and drawings, which should be done in pencil. [14]

25 Triangle  $A'B'C'$  is the image of triangle  $ABC$  after a dilation with a scale factor of  $\frac{1}{2}$  and centered at point  $A$ . Is triangle  $ABC$  congruent to triangle  $A'B'C'$ ? Explain your answer.

**26** Determine and state the area of triangle  $PQR$ , whose vertices have coordinates  $P(-2, -5)$ ,  $Q(3, 5)$ , and  $R(6, 1)$ .

[The use of the set of axes below is optional.]



**27** A support wire reaches from the top of a pole to a clamp on the ground. The pole is perpendicular to the level ground and the clamp is 10 feet from the base of the pole. The support wire makes a  $68^\circ$  angle with the ground. Find the length of the support wire to the *nearest foot*.