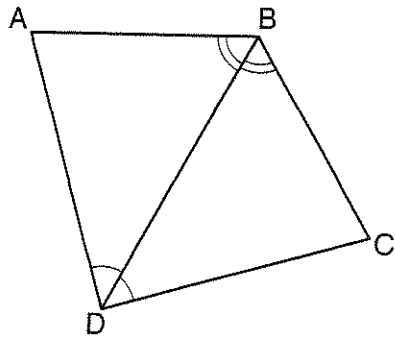




Use this space for computations.

- 16 The diagram below shows a pair of congruent triangles, with  $\angle ADB \cong \angle CDB$  and  $\angle ABD \cong \angle CBD$ .



Which statement must be true?

- (1)  $\angle ADB \cong \angle CBD$                       (3)  $\overline{AB} \cong \overline{CD}$   
(2)  $\angle ABC \cong \angle ADC$                       (4)  $\overline{AD} \cong \overline{CD}$
- 17 What is an equation of the line that is perpendicular to the line whose equation is  $y = \frac{3}{5}x - 2$  and that passes through the point  $(3, -6)$ ?

- (1)  $y = \frac{5}{3}x - 11$                       (3)  $y = -\frac{5}{3}x - 1$   
(2)  $y = -\frac{5}{3}x + 11$                       (4)  $y = \frac{5}{3}x + 1$

- 18 Point A lies in plane B. How many lines can be drawn perpendicular to plane B through point A?

- (1) one    (3) zero  
(2) two    (4) infinite

- 23 The number of degrees in the sum of the interior angles of a pentagon is

- (1) 72    (3) 540  
(2) 360    (4) 720

- 24 What is the equation of a line passing through  $(2, -1)$  and parallel to the line represented by the equation  $y = 2x + 1$ ?

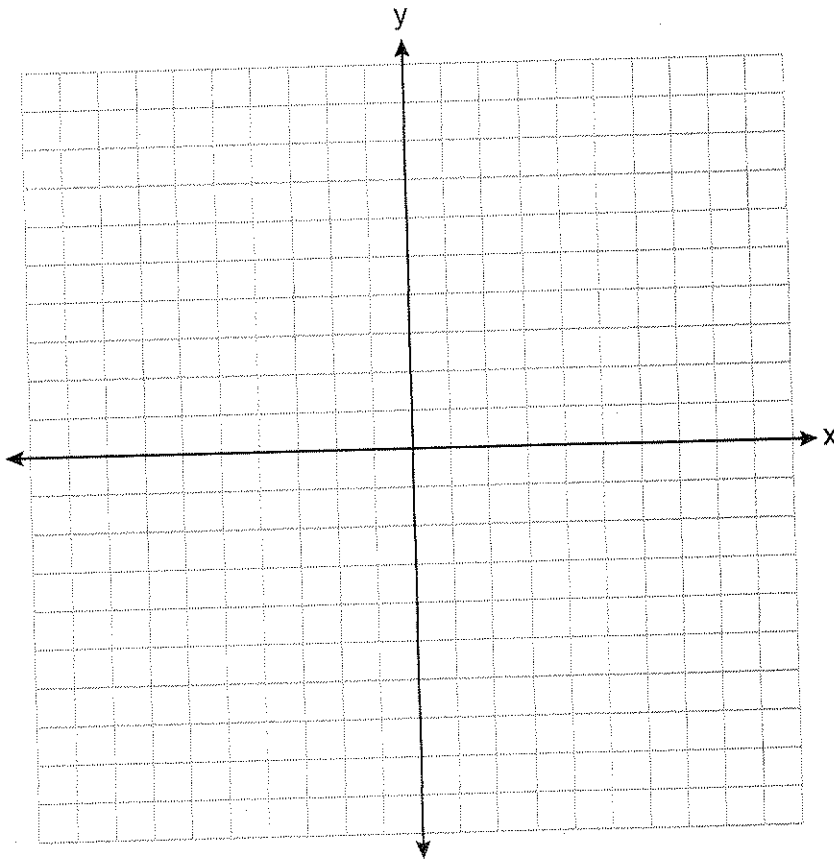
- (1)  $y = -\frac{1}{2}x$                                       (3)  $y = 2x - 5$   
(2)  $y = -\frac{1}{2}x + 1$                               (4)  $y = 2x - 1$

37 Triangle  $HKL$  has vertices  $H(-7,2)$ ,  $K(3,-4)$ , and  $L(5,4)$ . The midpoint of  $\overline{HL}$  is  $M$  and the midpoint of  $\overline{LK}$  is  $N$ .

Determine and state the coordinates of points  $M$  and  $N$ .

Justify the statement:  $\overline{MN}$  is parallel to  $\overline{HK}$ .

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



Part IV

Answer the question in this part. A correct answer will receive 6 credits. Clearly indicate the necessary steps, including appropriate formula substitutions, diagrams, graphs, charts, etc. A correct numerical answer with no work shown will receive only 1 credit. The answer should be written in pen. [6]

38 In the diagram below of quadrilateral  $ABCD$ ,  $\overline{AD} \cong \overline{BC}$  and  $\angle DAE \cong \angle BCE$ .

Line segments  $AC$ ,  $DB$ , and  $FG$  intersect at  $E$ .

Prove:  $\triangle AEF \cong \triangle CEG$

