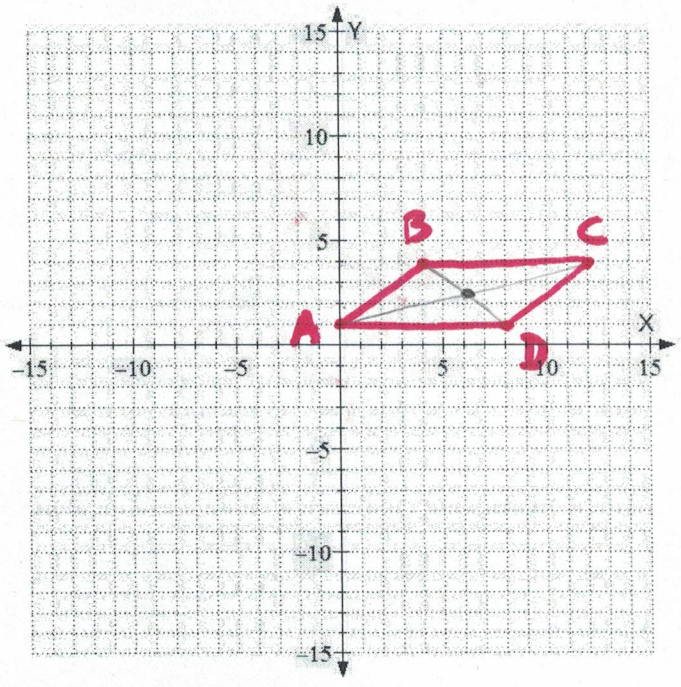
Geometry (E)
Chapter 7 Coordinate Proofs (7.3 #17-20)

Name: KEY

Period: _____

**17.** $A(0, 1), B(4, 4), C(12, 4), D(8, 1)$




SLOPES

$\overline{AB}$ AND $\overline{CD} = \boxed{\frac{3}{4}}$

$\overline{BC}$ AND $\overline{AD} = \frac{0}{8} = \boxed{0}$

OPP SIDES PARALLEL

LENGTHS / DISTANCES

$\overline{AB}$ AND $\overline{CD} = \sqrt{3^2+4^2} = \sqrt{25} = \boxed{5}$

$\overline{BC}$ AND $\overline{AD} = \sqrt{0^2+8^2} = \sqrt{64} = \boxed{8}$

OPP. SIDES CONGRUENT

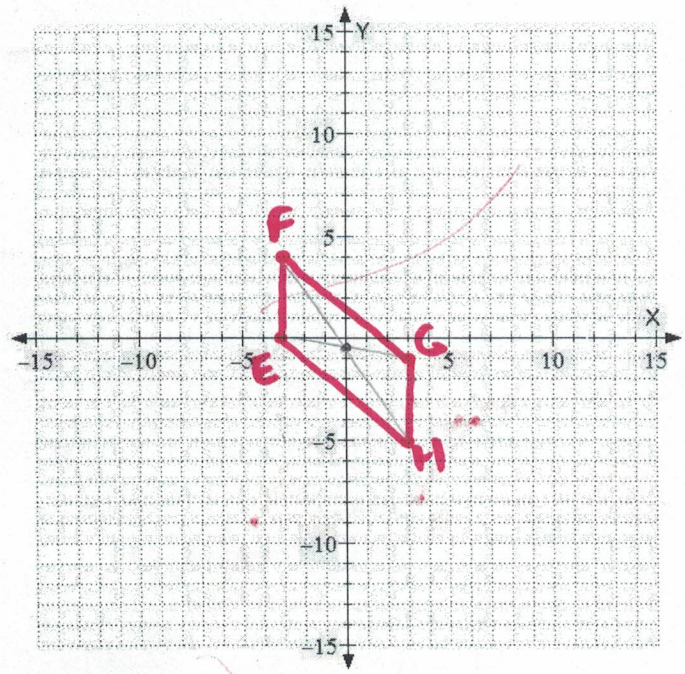
MIDPOINTS OF DIAGONALS

$\overline{AC} = \left(\frac{0+12}{2}, \frac{1+4}{2}\right) = (6, 2.5)$

$\overline{BD} = \left(\frac{4+8}{2}, \frac{4+1}{2}\right) = (6, 2.5)$

DIAGS BISECT EACH OTHER

**18.** $E(-3, 0), F(-3, 4), G(3, -1), H(3, -5)$




SLOPES

$\overline{EF}$ AND $\overline{GH} = \boxed{\frac{4}{0}} = \text{UNDEFINED}$

$\overline{FG}$ AND $\overline{EH} = \boxed{-\frac{5}{6}}$

OPP. SIDES PARALLEL

LENGTHS / DISTANCES

$\overline{EF}$ AND $\overline{GH} = \sqrt{0^2+4^2} = \boxed{4}$

$\overline{FG}$ AND $\overline{EH} = \sqrt{6^2+5^2} = \boxed{\sqrt{61}}$

OPP. SIDES CONGRUENT

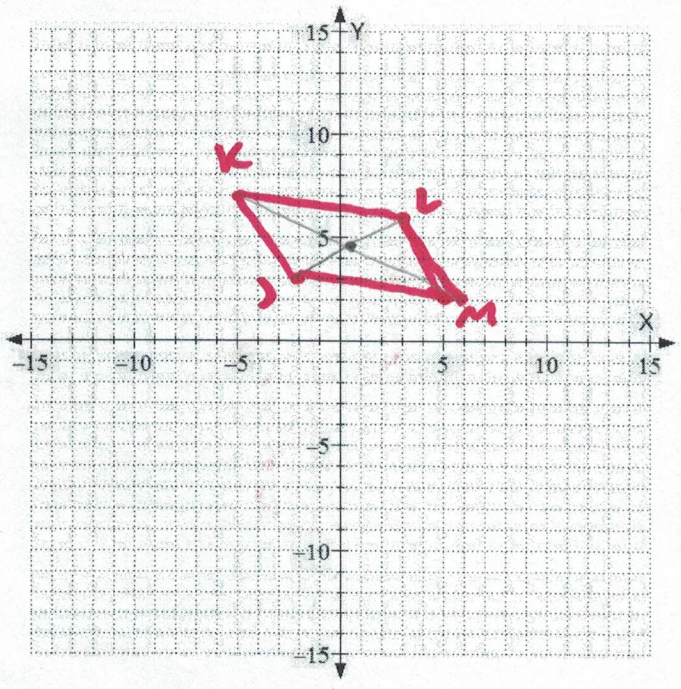
MIDPOINTS OF DIAGONALS

$\overline{EG} = \left(\frac{-3+3}{2}, \frac{0+(-1)}{2}\right) = \left(0, -\frac{1}{2}\right)$

$\overline{FH} = \left(\frac{-3+3}{2}, \frac{4+(-5)}{2}\right) = \left(0, -\frac{1}{2}\right)$

DIAGS BISECT EACH OTHER

**19.** $J(-2, 3), K(-5, 7), L(3, 6), M(6, 2)$




SLOPES

$\overline{JK}$ AND $\overline{LM} = \boxed{-\frac{4}{3}}$

$\overline{KL}$ AND $\overline{JM} = \boxed{-\frac{1}{8}}$

OPP. SIDES PARALLEL

LENGTHS / DISTANCES

$\overline{JK}$ AND $\overline{LM} = \sqrt{3^2+4^2} = \boxed{5}$

$\overline{KL}$ AND $\overline{JM} = \sqrt{7^2+1^2} = \boxed{\sqrt{50}}$

OPP. SIDES CONGRUENT

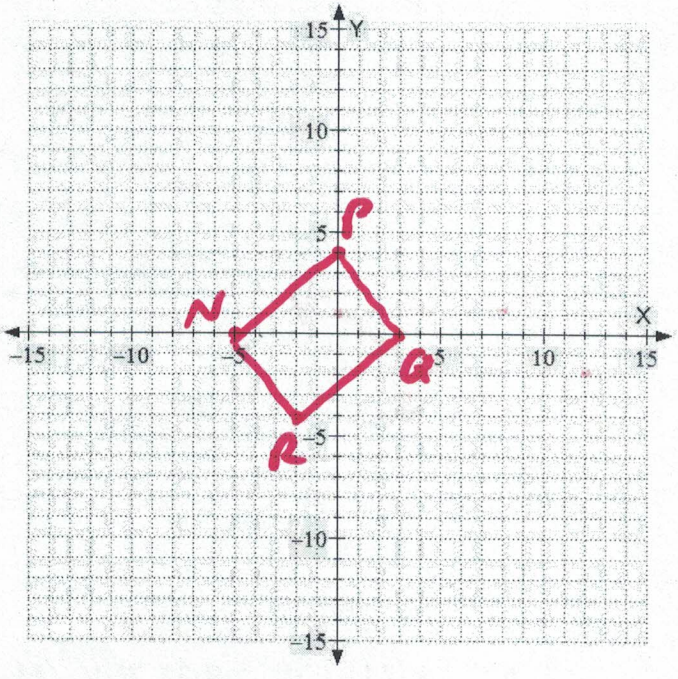
MIDPOINTS OF DIAGONALS

$\overline{JL} = \left(\frac{-2+3}{2}, \frac{3+6}{2}\right) = \left(\frac{1}{2}, 4\frac{1}{2}\right)$

$\overline{KM} = \left(\frac{-5+6}{2}, \frac{7+2}{2}\right) = \left(\frac{1}{2}, 4\frac{1}{2}\right)$

DIAGS BISECT EACH OTHER

**20.** $N(-5, 0), P(0, 4), Q(3, 0), R(-2, -4)$




SLOPES

$\overline{NP}$ AND $\overline{QR} = \boxed{\frac{4}{5}}$

$\overline{PQ}$ AND $\overline{NR} = \boxed{-\frac{4}{3}}$

OPP. SIDES PARALLEL

LENGTHS / DISTANCES

$\overline{NP}$ AND $\overline{QR} = \sqrt{5^2+4^2} = \boxed{\sqrt{41}}$

$\overline{PQ}$ AND $\overline{NR} = \sqrt{3^2+4^2} = \boxed{5}$

OPP. SIDES CONGRUENT

MIDPOINTS OF DIAGONALS

$\overline{NQ} = \left(\frac{-5+3}{2}, \frac{0+0}{2}\right) = (-1, 0)$

$\overline{PR} = \left(\frac{0+(-2)}{2}, \frac{4+(-4)}{2}\right) = (-1, 0)$

DIAGS BISECT EACH OTHER