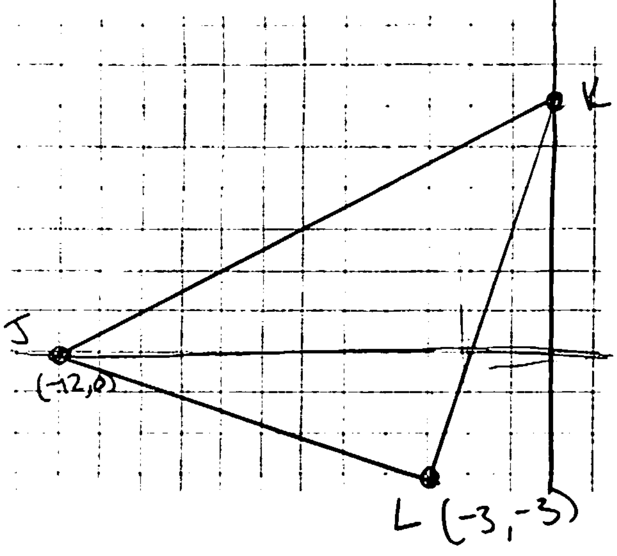
Geometry
Chapter 11 Practice 3

Name:

1. J (-12, 0), K (0, 6) and L (-3, -3) are the vertices of a triangle



a. Show that ΔJKL is isosceles.

$JK = \sqrt{(0--12)^2 + (6-0)^2}$

$= \sqrt{12^2 + 6^2} = \sqrt{144+36} = \sqrt{180}$

$KL = \sqrt{(0--3)^2 + (6--3)^2} = \sqrt{3^2 + 9^2} = \sqrt{9+81} = \sqrt{90}$

$JL = \sqrt{(-3+12)^2 + (-3-0)^2} = \sqrt{9^2 + 3^2} = \sqrt{90}$

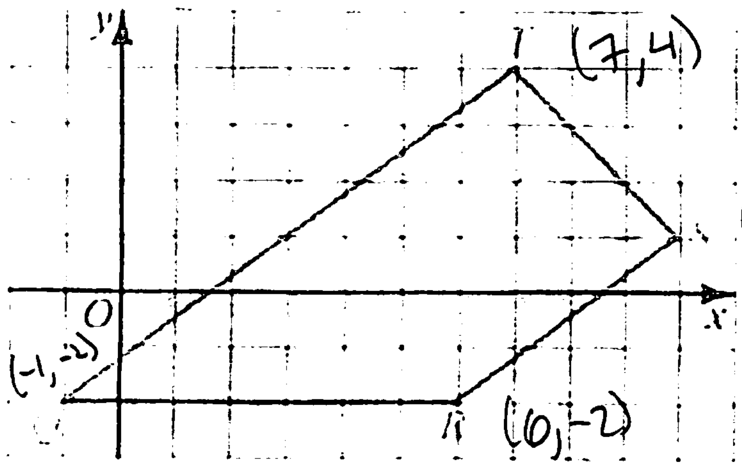
$KL = JL$ ∴ isosceles

b. Show that ΔJKL is a right triangle.

$mKL = \frac{6--3}{0--3} = \frac{9}{3} = 3$ $mJL = \frac{-3-0}{-3+12} = \frac{3}{9} = \frac{-1}{3}$

$KL \perp JL$ So Right Δ.

2. Show that *QRST* is a trapezoid.



$m\overline{QT}$ $\frac{4--2}{7--1} = \frac{6}{8} = \frac{3}{4}$

$mRS = \frac{1--2}{10-6} = \frac{3}{4}$

Midpt $TR = (\frac{13}{2}, \frac{2}{2}) = (\frac{13}{2}, 1)$

Midpt $SQ = (\frac{-1+10}{2}, \frac{-2+1}{2}) = (\frac{9}{2}, \frac{-1}{2})$ ∴ Not a pgram

∴ QRST is a trapezoid

3. Determine whether $\overleftrightarrow{AB}$ and $\overleftrightarrow{CD}$ are parallel, perpendicular, or neither.
A(-1, -12), B(-17. 2), C(1, 2), D(-7, 9)

$mAB = \frac{2--12}{-17+1} = \frac{14}{-16} = \frac{-7}{8}$ $mCD = \frac{9-2}{-7-1} = \frac{7}{-8}$ Parallel

4. Determine whether AB and CD are parallel, perpendicular, or neither.
A(1, 3), B(10. 2), C(0, 12), D(-1, 3)

$mAB = \frac{2-3}{10-1} = \frac{-1}{9}$ $mCD = \frac{3-12}{-1-0} = \frac{-9}{-1} = \frac{9}{1}$ Perpendicular

5. Find the slope, midpoint, and distance of the segment with endpoints at (-4, 2) and (7, -4).

$m = \frac{-4-2}{7--4} = \frac{-6}{11}$

$d = \sqrt{(7--4)^2 + (-4-2)^2}$

$\sqrt{11^2 + 6^2}$

$\sqrt{121+36}$

$\sqrt{157}$

Mdpt $\left(\frac{-4+7}{2}, \frac{2+-4}{2}\right) = (3/2, -1)$

Slope = $-6/11$
Midpoint = $(3/2, -1)$
Distance = $\sqrt{157}$

6. The endpoints of two segments are given. Determine whether the segments are parallel, perpendicular, or neither. (5, -2) and (6, 9); (3, -4) and (0, -1)

$\frac{9--2}{6-5} = \frac{11}{1}$

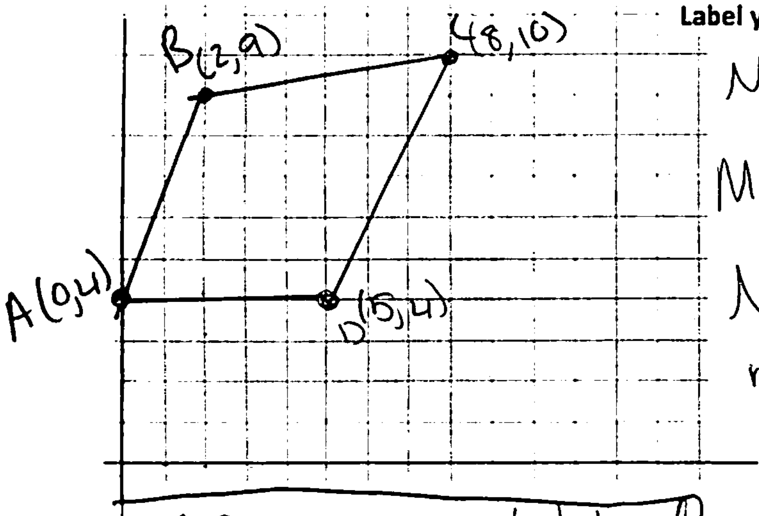
$\frac{-1++4}{0-3} = \frac{3}{-3}$

Neither

7. On the grid provided, graph quadrilateral ABCD.

A (0,4), B(2,9), C(8,10), D(5,4) What is the **most specific** name for this quadrilateral? Why?

Label your work using the letters of the end points of the segment.



Midpt AC = $\left(\frac{8+0}{2}, \frac{10+4}{2}\right) = (4,7)$

Midpt BD = $\left(\frac{2+5}{2}, \frac{9+4}{2}\right) = \left(\frac{7}{2}, \frac{13}{2}\right)$

Not a pgram

$mAB = \frac{9-4}{2-0} = \frac{5}{2}$ $mCD = \frac{10-4}{8-5} = \frac{6}{3} = 2$

$mAD = 0$ $mBC = \frac{10-9}{8-2} = \frac{1}{6}$

$\boxed{\text{ABCD is a quadrilateral}}$ No ∥ sides, Not a trapezoid.

8. In a coordinate place, point *A* has coordinates (1, 9) and point *B* has coordinates (12, 5). What are the coordinates of the midpoint of $\overline{AB}$.

Midpt $\left(\frac{1+12}{2}, \frac{9+5}{2}\right)$

$\left(\frac{13}{2}, 7\right)$