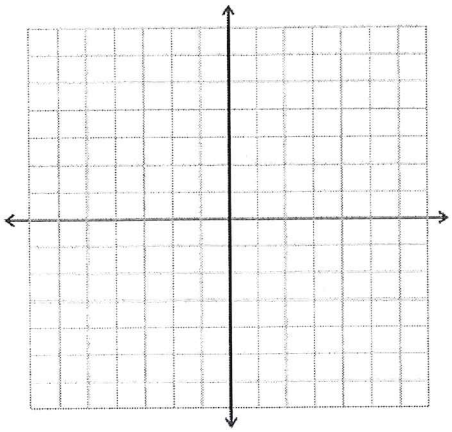
TRAPEZOID HOMEWORK

1. Determine whether the figure with vertices E(-4,3), F(0,4), G(4,1), and H(4,-3) is a trapezoid. Explain if it is an isosceles triangle.

To be a trapezoid, you must test for _____

What about to be and isosceles trapezoid? _____



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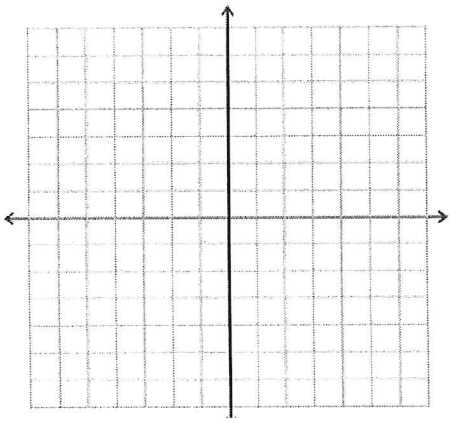
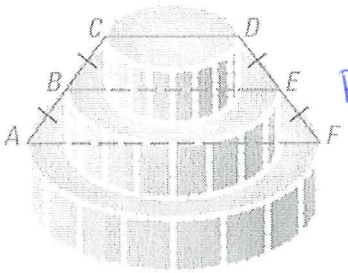
2. Determine whether the figure with vertices E(-3,2), F(-1,6), G(4,6), and H(6,2) is a trapezoid. Explain if it is an isosceles triangle.

To be a trapezoid, you must test for _____

What about to be and isosceles trapezoid? _____



3 **LAYER CAKE** The top layer of the cake has a diameter of 10 inches. The bottom layer has a diameter of 22 inches. What is the diameter of the middle layer?



$BE = \frac{1}{2}(AF + CD)$

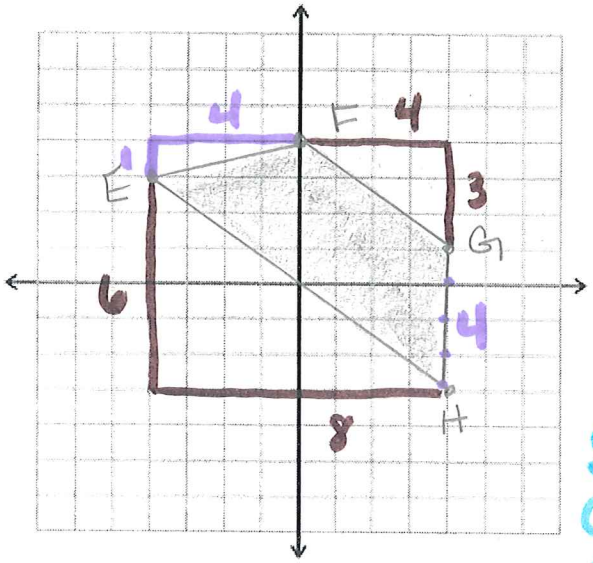
$BE = \frac{1}{2}(22 + 10)$

$\boxed{BE = 16 \text{ inches}}$

5. Determine whether the figure with vertices E(-4,3), F(0,4), G(4,1), and H(4,-3) is a trapezoid.

To be a trapezoid, you must test for One pair of op. sides //

What about to be and isosceles trapezoid? legs (non // sides) ≅



Check slopes to see if //

$FG = \frac{-3}{4}$ $EH = \frac{-6}{8} = -\frac{3}{4}$

∴ One pair of op. sides //.

$GH = 4$, $EF = 4^2 + 1^2 = \sqrt{17}$

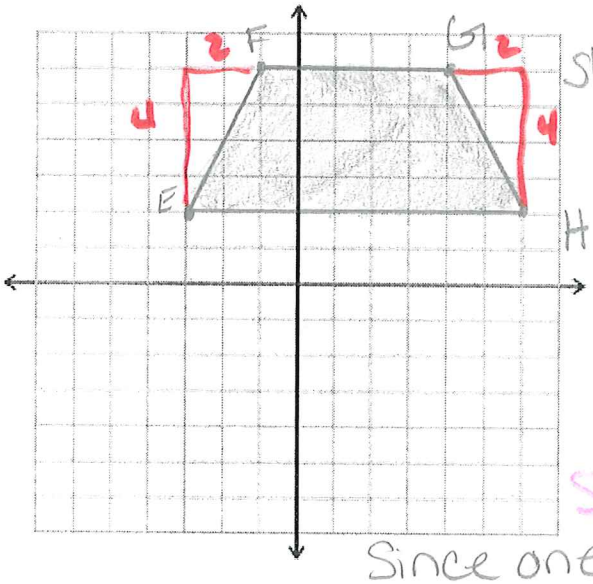
∴ Legs are NOT ≅

Since only ONE pair of op. sides are parallel, This EFGH is a GENERAL TRAPEZOID.

6. Determine whether the figure with vertices E(-3,2), F(-1,6), G(4,6), and H(6,2) is a trapezoid.

To be a trapezoid, you must test for one pair of opposite sides //

What about to be and isosceles trapezoid? legs (non // sides) ≅



Check slopes to see if //

Slope FG = 0 Slope EH = 0

∴ one pair of op. sides are //

Check to see if legs are ≅

$FE = 4^2 + 2^2 = \sqrt{20} = 2\sqrt{5}$

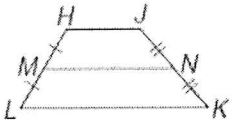
$HG = 4^2 + 2^2 = \sqrt{20} = 2\sqrt{5}$

~~Since opposite sides~~

Since one pair of opposite sides are // and the non // sides called legs are ≅ It is an isosceles Trap

Exercises

$\overline{MN}$ is the median of trapezoid $HJKL$. Find each indicated value.



1. Find MN if $HJ = 32$ and $LK = 60$.

   MN = 46

2. Find LK if $HJ = 18$ and $MN = 28$.

   LK = 38

3. Find MN if $HJ + LK = 42$.

   MN = 21

4. Find $m\angle LMN$ if $m\angle LHJ = 116$.

   ∠LMN = 116

5. Find $m\angle JKL$ if $HJKL$ is isosceles and $m\angle HLK = 62$.

   ∠JKL = 62

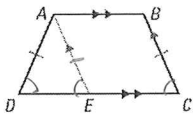
6. Find HJ if $MN = 5x + 6$, $HJ = 3x + 6$, and $LK = 8x$.

   HJ = 24

8. **GIVEN** ▶ $ABCD$ is an isosceles trapezoid.

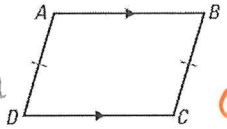
   $\overline{AB} \parallel \overline{DC}$, $\overline{AD} \cong \overline{BC}$

   PROVE ▶ $\angle D \cong \angle C$.



1.	1. given
2. ABCE is a parallelogram	2. def of parallelogram
3. AE ≅ BC	3. op. sides of para are ≅
4. ∠C ≅ ∠AED	4. corr. ∠s are ≅
5. ∠D ≅ ∠AED	5. base ∠s of is. △ ≅
6. ∠D ≅ ∠C	6. Substitution

9. **ERROR ANALYSIS** A student says that parallelogram $ABCD$ is an isosceles trapezoid because $\overline{AB} \parallel \overline{DC}$ and $\overline{AD} \cong \overline{BC}$. Explain what is wrong with this reasoning.



our def of trap is only one pair of op. sides ∥

This would be a parallelogram only.

STUDYING A TRAPEZOID Draw a trapezoid $PQRS$ with $\overline{QR} \parallel \overline{PS}$. Identify the segments or angles of $PQRS$ as *bases, consecutive sides, legs, diagonals, base angles,* or *opposite angles.*

10. $\overline{QR}$ and $\overline{PS}$ Bases
11. $\overline{PQ}$ and $\overline{RS}$ legs
12. $\overline{PQ}$ and $\overline{QR}$ consecutive sides
13. $\overline{QS}$ and $\overline{PR}$ diagonals
14. $\angle Q$ and $\angle S$ opposite ∠s
15. $\angle S$ and $\angle P$ Base ∠s.