Grade 7

Introduction to The Geometer's Sketchpad

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Common Tools

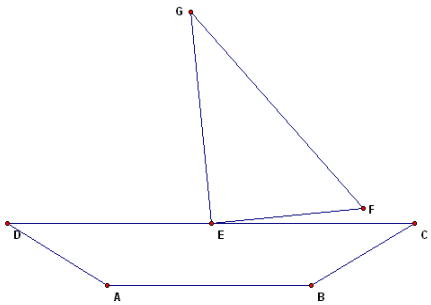
- Selection Tool
- Point Tool
- Line Segment Tool

1. Open The Geometer's Sketchpad.
   a. Hold down the line tool and choose the ray tool.
   b. Draw any angle.
   c. Choose the selection tool and click on empty space.
   d. Select the three points, one at a time. Be sure that the second point is the vertex.
   e. Click on the *Measure* menu. Choose *Angle.*
   f. Drag point A until $\angle ABC = 50^{\circ}$.
   g. Clear the screen using the selection rectangle and the delete key.

2. a. Click *File* menu. Choose *New Sketch.*
   b. Hold down the line tool and choose the line segment tool.
   c. Draw a horizontal line. Choose the selection tool. Click on the *Measure* menu and choose *Length.*
   d. Drag point B so that AB = 6 cm.
   e. Select the line segment tool. Beginning at B, draw any line segment.
   f. Choose the selection tool. Click on the *Measure* menu and choose *Length.*
   g. Drag point C so that BC = 8 cm.
   h. Select the three points in the order A, B, and C. Click on the *Measure* menu and choose *Angle.*
   i. Drag point C until $\angle ABC = 68^{\circ}$. Make sure that BC = 8 cm.
   j. Choose the line segment tool. Draw a line segment from C to A.
   k. Measure $\angle BAC =$ _____.

3. Construct a quadrilateral ABCD with AB = 10.6 cm, BC = 3.9 cm, $\angle ABC = 70^{\circ}$, CD = 7.7 cm, and $\angle BCD = 137^{\circ}$ in The Geometer's Sketchpad. Complete the following blanks:
   a. AD = _____cm b. $\angle ADC$ = _____ c. $\angle DAB$ = _____

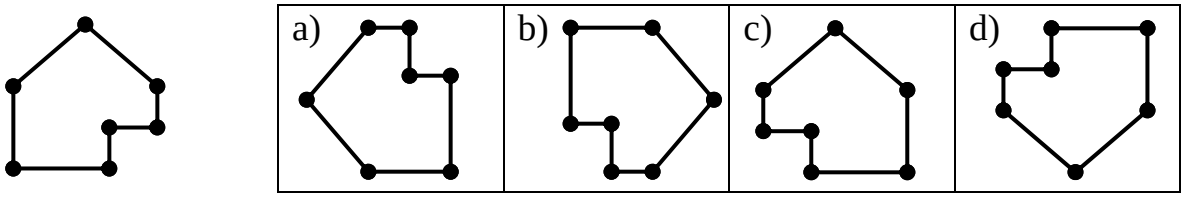
4. Construct the diagram at the right. Construct quadrilateral ABCD with AB = 6.0 cm, BC = 3.5 cm, $\angle ABC = 150^{o}$, CD = 12 cm, and $\angle BCD = 30^{o}$. Select the line segment CD. Click on the *Construct* menu and choose *Midpoint* (point E in the diagram). Construct triangle EGF with EF = 4.5 cm, GE = 6 cm, and $\angle GEF = 90^{o}$. Also, make sure $\angle FEC = 5^{o}$.



Complete the following blanks:

a. FG = _____cm b. $\angle FGE$ = _____ c. $\angle DEG$ = _____

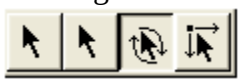
5. Circle the three shapes which were created by rotating the shape at left.



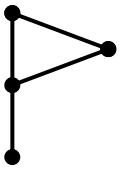
6. Use The Geometer's Sketchpad to draw the shape below.

a. Create the centre of rotation by selecting one of the points and double-clicking on it.

b. Rotate the shape into different positions by selecting the rotating tool and draw four of you results.

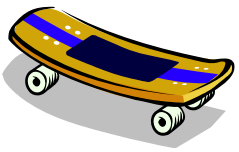


c. Does rotating change the size of the object?

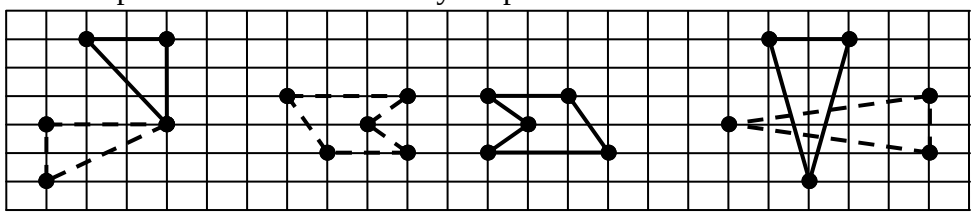


Did You Know?

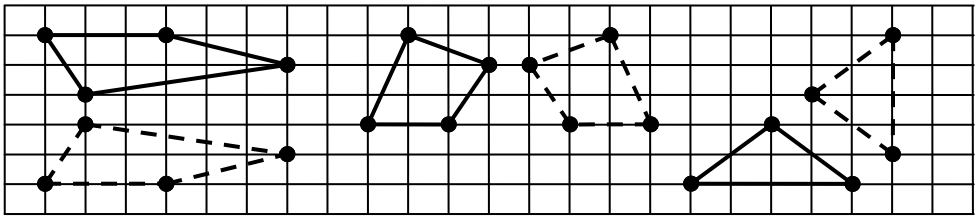
In 1999, Tony Hawk became the first person to complete the world record of two and one-half mid-air rotations on a skateboard.



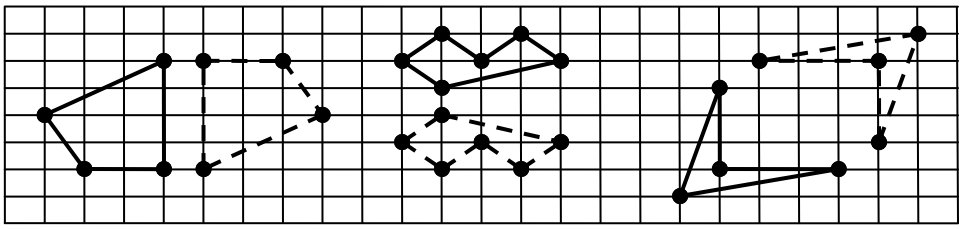
7. Each shape has been rotated. Use your pencil to mark each centre of rotation.



8. Each shape has been reflected. Use your pencil and ruler to draw the mirror.

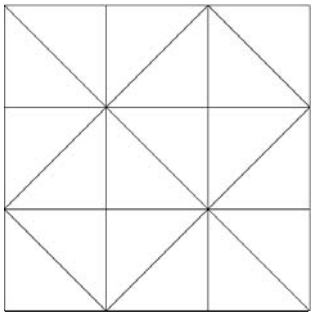


9. Each shape has been reflected or rotated. Draw the mirror or centre of rotation.



10. a. Draw any six-sided shape (hexagon).
    b. Draw a center of rotation anywhere inside the hexagon.
    c. Select the entire hexagon using a selection rectangle.
    d. Rotate the hexagon around the center of rotation.
    e. Draw a new center of rotation anywhere outside the hexagon.
    f. Rotate the hexagon around the new center of rotation.
    g. Which center of rotation made the hexagon rotate through the largest circle?
    h. How could you make this circle even larger?

TRY THIS!



How many triangles are there in the picture?