

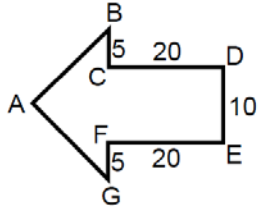
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Student ID: \_\_\_\_\_

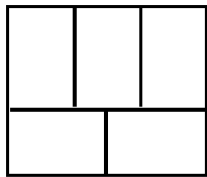
## Geometry 1 Homework

### ► Calculation

1. In the arrow shaped polygon (see figure), the angles at vertices  $A$ ,  $C$ ,  $D$ ,  $E$  and  $F$  are right angles,  $BC = FG = 5$ ,  $CD = FE = 20$ ,  $DE = 10$ , and  $AB = AG$ . The area of the polygon is closest to



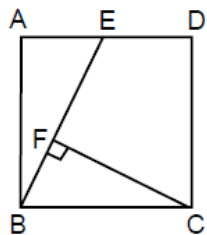
2. A rectangle with perimeter 176 is divided into five congruent rectangles as shown in the diagram. What is the perimeter of one of the five congruent rectangles?



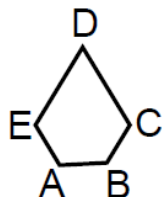
3. Five equilateral triangles, each with side  $2\sqrt{3}$ , are arranged so they are all on the same side of a line containing one side of each. Along this line, the midpoint of the base of one triangle is the vertex of the next. What is the area of the region of the plane that is covered by the union of the five triangular regions?



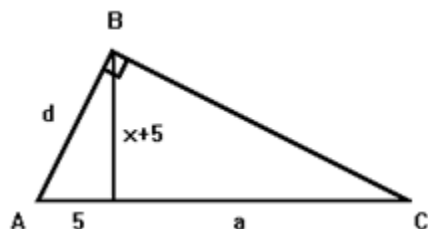
4. In the figure,  $ABCD$  is a  $2 \times 2$  square,  $E$  is the midpoint of  $AD$ , and  $F$  is on  $BE$ . If  $CF$  is perpendicular to  $BE$ , then what is the area of quadrilateral  $CDEF$ ?



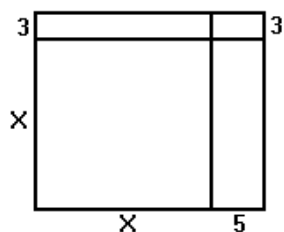
5. The convex polygon  $ABCDE$  has  $\angle A = \angle B = 120^\circ$ ,  $EA = AB = BC = 2$  and  $CD = DE = 4$ . What is the area of  $ABCDE$ ?



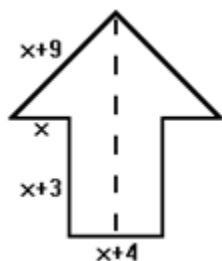
6. Write a polynomial to describe the area of the triangle  $ABC$  in terms of  $x$ .



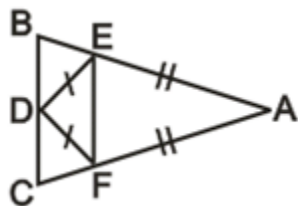
7. The Jones family had a square patch of lawn in their backyard. Its original area was  $x^2$ . They increased its length by 3 and its width by 5. Write a polynomial to describe the new area.



8. Given the symmetric shape below with a known perimeter of 77, find the area of the shape.

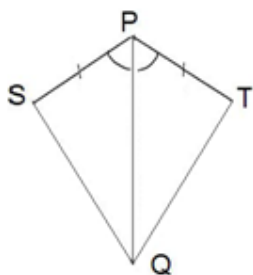


9. Triangles AEF and DEF are isosceles. Find the measure of  $\angle A$ , given that  $\angle EDF = 88^\circ$  and  $\angle BED = \angle DEF + 18^\circ$ ?

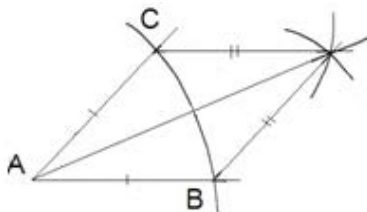


► **Proof**

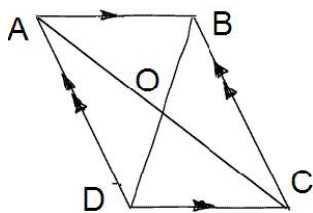
1. Given: PQ bisects  $\angle SPT$ ,  $SP = PT$ . Prove:  $\triangle SPQ \cong \triangle TPQ$ .



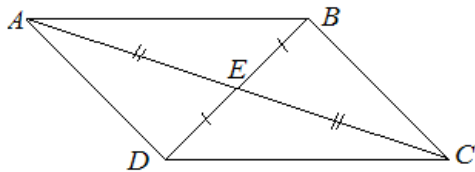
2. Given:  $AB = AC$ ,  $BD = CD$ . Prove: AD bisects  $\angle CAB$ .



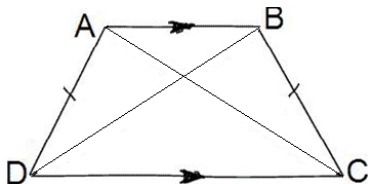
3. Given: Parallelogram ABCD with diagonals AC & BD. Prove:  $AO = OC$  and  $DO = OB$ .



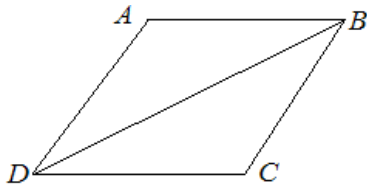
4. Given:  $AE = EC$  and  $DE = EB$ . Prove: ABCD is a parallelogram.



5. Given: trapezoid ABCD,  $AD = BC$ . Prove:  $AC = BD$ .



6. Given: parallelogram ABCD,  $\angle CBD = \angle ABD$ ,  $\angle BDC = \angle DAC$ . Prove: ABCD is a rhombus.



7. Given:  $\angle 1 \cong \angle 2$ ,  $\angle 3 \cong \angle 4$ , and  $\overline{BD} \cong \overline{CE}$ , Prove:  $\triangle ABD \cong \triangle ACE$ .

