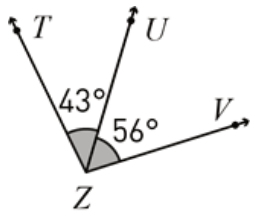
DAY 1: Basic Geometrical Elements

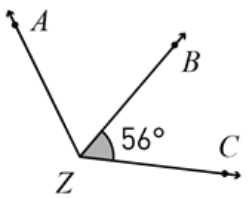
• *Self-Checking*

1 Fill in the blanks.

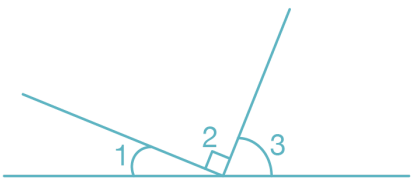
(1) $\angle TZU = 43°, \angle UZV = 56°, \angle TZV =$ _____ °.



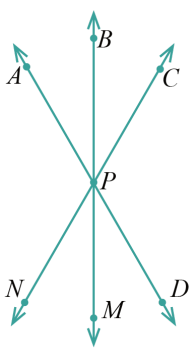
(2) $\angle AZC = 123°, \angle BZC = 56°, \angle AZB =$ _____ °.



2 As shown in the figure below, $\angle 2 + \angle 3 = 158°$, $\angle 1 = 22°$, and $\angle 2$ is a right angle. Thus, $\angle 3 =$ _____ ° and $\angle 1 + \angle 2 + \angle 3 =$ _____ °.

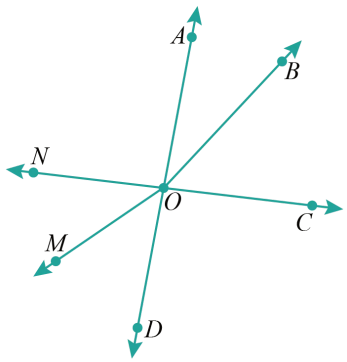


3 1.



$\overleftrightarrow{AD}$ and $\overleftrightarrow{BM}$ and $\overleftrightarrow{CN}$ are three lines intersecting at point P. $\angle DPM = \angle CPB = 30°$, $\angle APN =$ _____ °.

2.

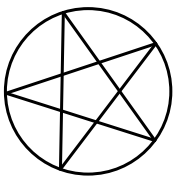


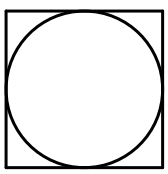
$\overleftrightarrow{AD}$, $\overleftrightarrow{CN}$, $\overrightarrow{OB}$, and $\overrightarrow{OM}$ intersect at point O. Find all the vertical angles.

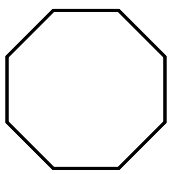
4 Which of the following letters have both parallel and perpendicular line segments?

A. F B. K C. L D. M

5 Which of the following shapes has the most lines of symmetry?

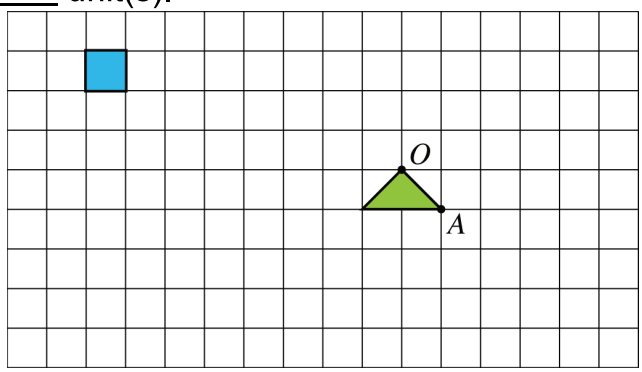
A. 

B. 

C. 

D. 

6 Draw the image of the triangle after a 90° clockwise rotation about point O and a translation of 3 units up and 2 units to the right. After the transformation, the distance between new point A and original point A is _____ unit(s).



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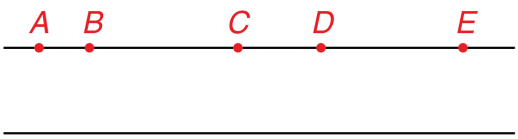
Bonus Tests

7 There are 5 students standing on one side of the road as shown in the picture below. Each of them wants to walk to the other side of the road which is parallel to the side of the road they are standing on in the shortest distance. Who has the shortest path?



8 As shown below, $\angle ADC = \angle ABC = 90^\circ$, $AD = CD$, $DP \perp AB$. The area of quadrilateral $ABCD$ is 81. $DP =$ _____ .