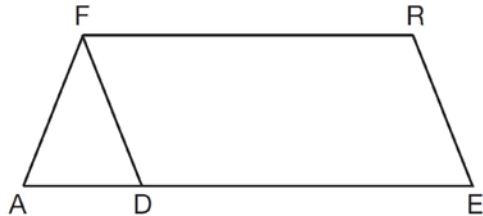


G.CO.C.11: Interior and Exterior Angles of Polygons 1

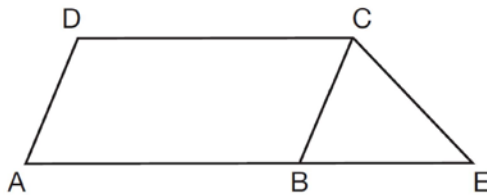
- 1 In the diagram of parallelogram $FRED$ shown below, \overline{ED} is extended to A , and \overline{AF} is drawn such that $\overline{AF} \cong \overline{DF}$.



If $m\angle R = 124^\circ$, what is $m\angle AFD$?

- 1) 124°
- 2) 112°
- 3) 68°
- 4) 56°

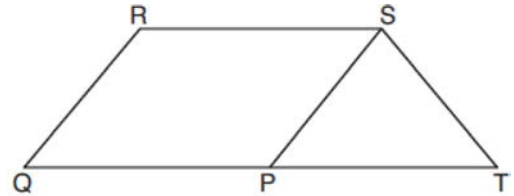
- 2 In the diagram below, $ABCD$ is a parallelogram, \overline{AB} is extended through B to E , and \overline{CE} is drawn.



If $\overline{CE} \cong \overline{BE}$ and $m\angle D = 112^\circ$, what is $m\angle E$?

- 1) 44°
- 2) 56°
- 3) 68°
- 4) 112°

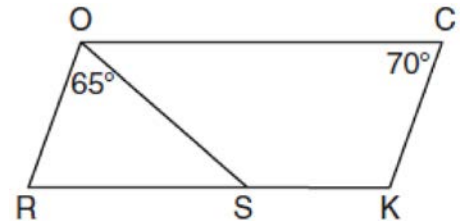
- 3 In parallelogram $PQRS$, \overline{QP} is extended to point T and \overline{ST} is drawn.



If $\overline{ST} \cong \overline{SP}$ and $m\angle R = 130^\circ$, what is $m\angle PST$?

- 1) 130°
- 2) 80°
- 3) 65°
- 4) 50°

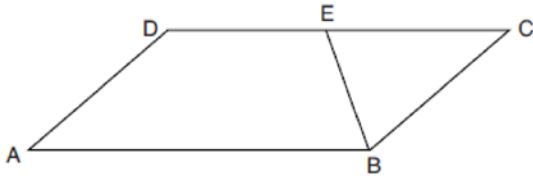
- 4 In the diagram below of parallelogram $ROCK$, $m\angle C$ is 70° and $m\angle ROS$ is 65° .



What is $m\angle KSO$?

- 1) 45°
- 2) 110°
- 3) 115°
- 4) 135°

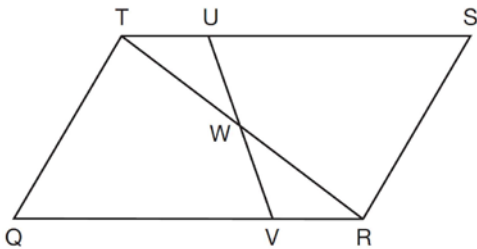
- 5 In parallelogram $ABCD$ shown below, \overline{EB} bisects $\angle ABC$.



If $m\angle A = 40^\circ$, then $m\angle BED$ is

- 1) 40°
- 2) 70°
- 3) 110°
- 4) 140°

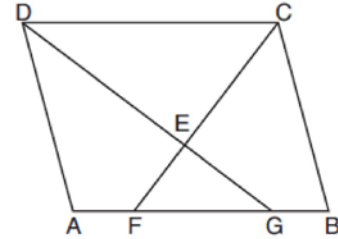
- 6 In parallelogram $QRST$ shown below, diagonal \overline{TR} is drawn, U and V are points on \overline{TS} and \overline{QR} , respectively, and \overline{UV} intersects \overline{TR} at W .



If $m\angle S = 60^\circ$, $m\angle SRT = 83^\circ$, and $m\angle TWU = 35^\circ$, what is $m\angle WVQ$?

- 1) 37°
- 2) 60°
- 3) 72°
- 4) 83°

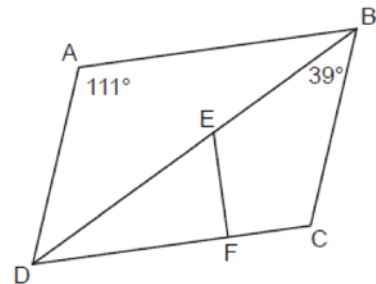
- 7 In the diagram below of parallelogram $ABCD$, \overline{AFGB} , \overline{CF} bisects $\angle DCB$, \overline{DG} bisects $\angle ADC$, and \overline{CF} and \overline{DG} intersect at E .



If $m\angle B = 75^\circ$, then the measure of $\angle EFA$ is

- 1) 142.5°
- 2) 127.5°
- 3) 52.5°
- 4) 37.5°

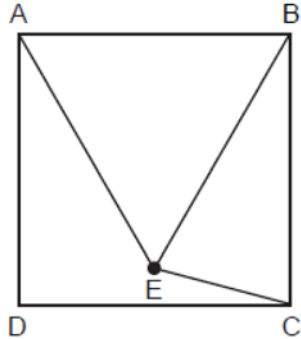
- 8 In the diagram below of parallelogram $ABCD$, diagonal \overline{BD} and \overline{EF} are drawn, $\overline{EF} \perp \overline{DFC}$, $m\angle DAB = 111^\circ$, and $m\angle DBC = 39^\circ$.



What is $m\angle DEF$?

- 1) 30°
- 2) 51°
- 3) 60°
- 4) 120°

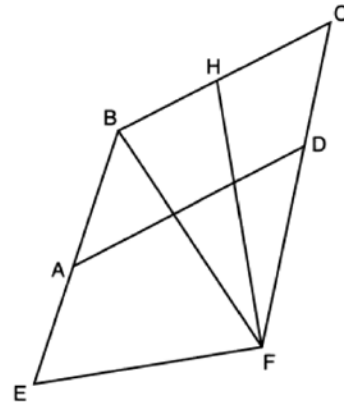
- 9 In the diagram below, point E is located inside square $ABCD$ such that $\triangle ABE$ is equilateral, and \overline{CE} is drawn.



What is $m\angle BEC$?

- 1) 30°
- 2) 60°
- 3) 75°
- 4) 90°

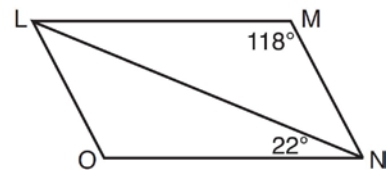
- 10 Quadrilateral $EBCF$ and \overline{AD} are drawn below, such that $ABCD$ is a parallelogram, $\overline{EB} \cong \overline{FB}$, and $\overline{EF} \perp \overline{FH}$.



If $m\angle E = 62^\circ$ and $m\angle C = 51^\circ$, what is $m\angle FHB$?

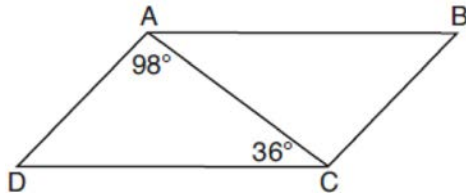
- 1) 79°
- 2) 76°
- 3) 73°
- 4) 62°

- 11 The diagram below shows parallelogram $LMNO$ with diagonal \overline{LN} , $m\angle M = 118^\circ$, and $m\angle LNO = 22^\circ$.



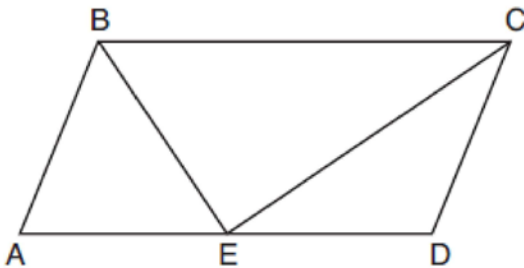
Explain why $m\angle NLO$ is 40 degrees.

- 12 In parallelogram $ABCD$ shown below, $m\angle DAC = 98^\circ$ and $m\angle ACD = 36^\circ$.



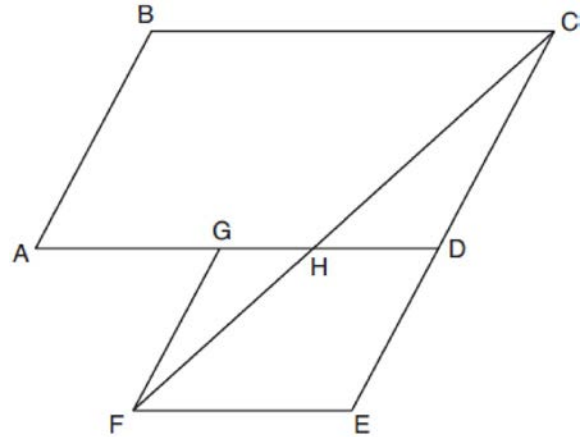
What is the measure of angle B ? Explain why.

- 13 In parallelogram $ABCD$ shown below, the bisectors of $\angle ABC$ and $\angle DCB$ meet at E , a point on \overline{AD} .



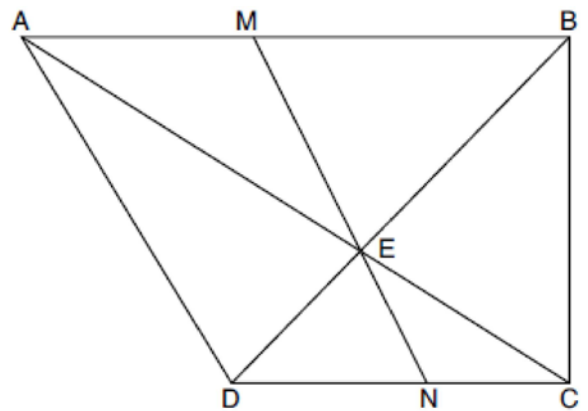
If $m\angle A = 68^\circ$, determine and state $m\angle BEC$.

- 14 Parallelogram $ABCD$ is adjacent to rhombus $DEFG$, as shown below, and \overline{FC} intersects \overline{AGD} at H .



If $m\angle B = 118^\circ$ and $m\angle AHC = 138^\circ$, determine and state $m\angle GFH$.

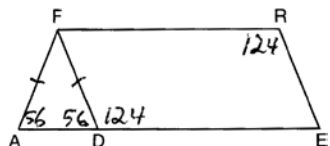
- 15 Trapezoid $ABCD$, where $\overline{AB} \parallel \overline{CD}$, is shown below. Diagonals \overline{AC} and \overline{DB} intersect \overline{MN} at E , and $\overline{AD} \cong \overline{AE}$.



If $m\angle DAE = 35^\circ$, $m\angle DCE = 25^\circ$, and $m\angle NEC = 30^\circ$, determine and state $m\angle ABD$.

G.CO.C.11: Interior and Exterior Angles of Polygons 1
Answer Section

1 ANS: 3



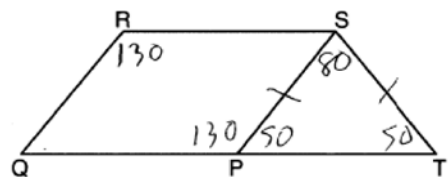
REF: 081508geo

2 ANS: 1

$180 - (68 \cdot 2)$

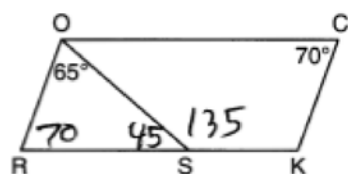
REF: 081624geo

3 ANS: 2



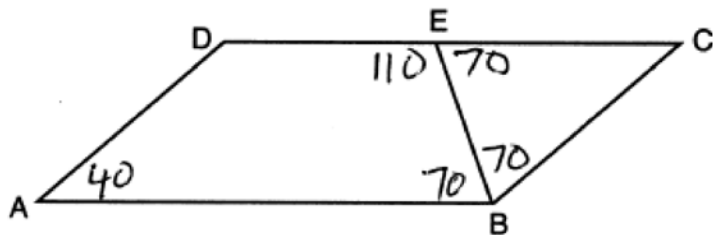
REF: 061921geo

4 ANS: 4



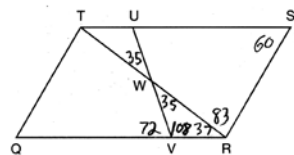
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5 ANS: 3



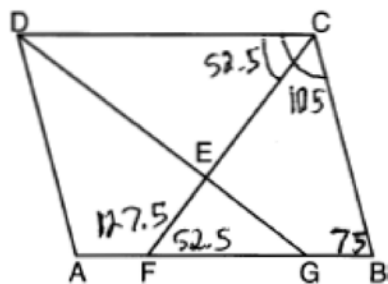
REF: 082215geo

6 ANS: 3



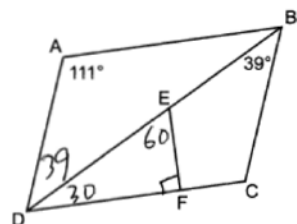
REF: 011603geo

7 ANS: 2



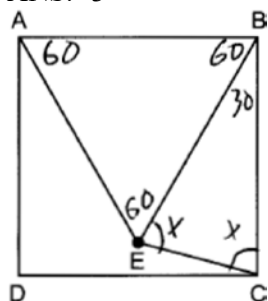
REF: 081907geo

8 ANS: 3



REF: 062306geo

9 ANS: 3



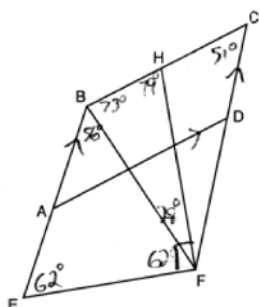
$$30 + 2x = 180$$

$$2x = 150$$

$$x = 75$$

REF: 082315geo

10 ANS: 1



$$m\angle CBE = 180 - 51 = 129$$

REF: 062221geo

11 ANS:

Opposite angles in a parallelogram are congruent, so $m\angle O = 118^\circ$. The interior angles of a triangle equal 180° .
 $180 - (118 + 22) = 40$.

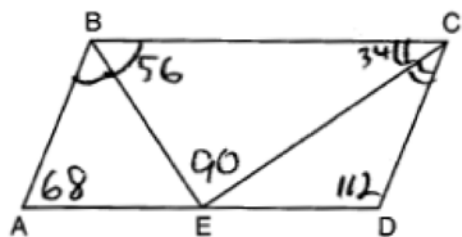
REF: 061526geo

12 ANS:

$\angle D = 46^\circ$ because the angles of a triangle equal 180° . $\angle B = 46^\circ$ because opposite angles of a parallelogram are congruent.

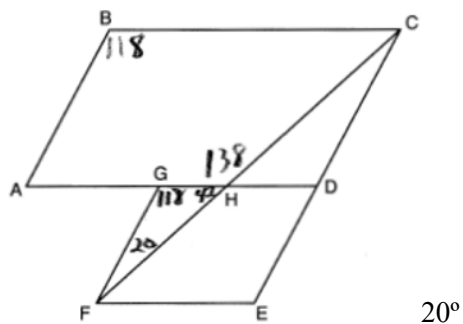
REF: 081925geo

13 ANS:



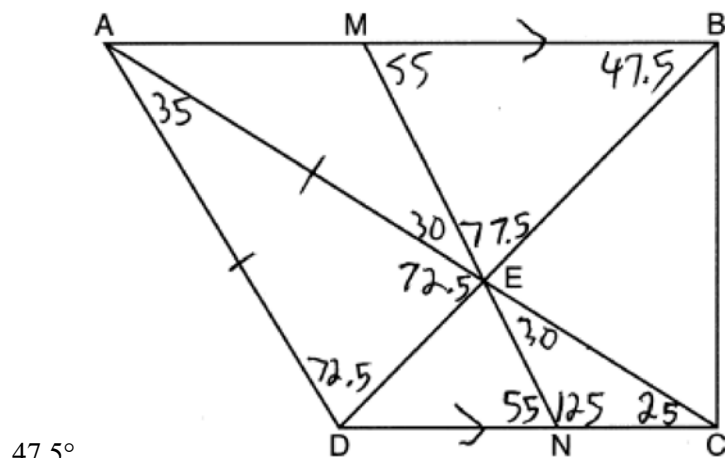
REF: 081826geo

14 ANS:



REF: 011926geo

15 ANS:



47.5°

REF: 082230geo