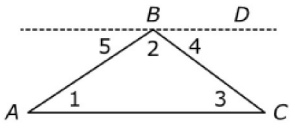
34. An incomplete proof of the theorem that the sum of the interior angles of a triangle is 180° is shown.



Given: $\triangle ABC$

Prove: $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$

Statement	Reason
1) Draw line *BD* parallel to line *AC*	1)
2)	2)
3) $m\angle 2 + m\angle 4 = m\angle ABD$; $m\angle 5 + m\angle ABD = 180^\circ$	3) Angle addition postulate
4) $m\angle 5 + m\angle 2 + m\angle 4 = 180^\circ$	4) Substitution property of equality
5) $m\angle 1 + m\angle 2 + m\angle 3 = 180^\circ$	5)

Part A

What is the appropriate reason for the statement in step 1 ?

- A. Through any two points, there is exactly one line.
- B. Through a point not on a line, there is exactly one line parallel to the given line.
- C. If two lines cut by a transversal form congruent corresponding angles, then the lines are parallel.
- D. If two lines cut by a transversal form congruent alternate interior angles, then the lines are parallel.

Part B

Which pairs of angle congruences or equalities should be used for the statement in step 2 ?

Indicate **all** such pairs.

- A. $\angle 1 \cong \angle 2$ or $m\angle 1 = m\angle 2$
- B. $\angle 1 \cong \angle 3$ or $m\angle 1 = m\angle 3$
- C. $\angle 1 \cong \angle 4$ or $m\angle 1 = m\angle 4$
- D. $\angle 1 \cong \angle 5$ or $m\angle 1 = m\angle 5$
- E. $\angle 2 \cong \angle 3$ or $m\angle 2 = m\angle 3$
- F. $\angle 2 \cong \angle 4$ or $m\angle 2 = m\angle 4$
- G. $\angle 2 \cong \angle 5$ or $m\angle 2 = m\angle 5$
- H. $\angle 3 \cong \angle 4$ or $m\angle 3 = m\angle 4$

Part C

Select from the drop-down menu to correctly complete the sentence.

The reason for the statement in step 2 is that Choose... .

- If two parallel lines are cut by a transversal, then alternate interior angles are congruent
- If two parallel lines are cut by a transversal, then corresponding angles are congruent
- It two lines cut by a transversal form congruent corresponding angles, then the lines are parallel
- It two lines cut by a transversal form congruent alternate interior angles, then the lines are parallel

Part D

Select from the drop-down menu to correctly complete the sentence.

The appropriate reason for the statement in step 5 is the Choose... .

- Reflexive property of equality
- symmetric property of equality
- transitive property of equality
- substitution property of equality