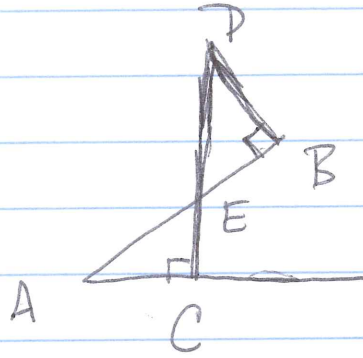


QUIZ 2A

Fill in the reasons for the steps in the following proof:

GIVEN



$$\angle AEB = 90^\circ$$

$$\angle DEC = 90^\circ$$

$$\angle ACD = 90^\circ$$

$$\angle BDC = 90^\circ$$

TO PROVE $\angle BAC = \angle BDC$.

$$1. \quad \angle BAC = \angle EAC + \angle AEC + \angle ACE = 180^\circ = \angle DEB + \angle EBD + \angle BDC.$$

$$2. \quad \angle ACE = 90^\circ = \angle EBD = \angle ABD$$

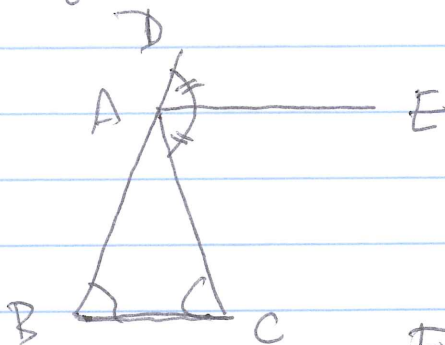
$$3. \quad \angle AEC = \angle DEB.$$

$$4. \quad \text{Therefore } \angle BAC = \angle EAC = \angle BDC = \angle BDE.$$

Q UIZ 2B

Fill in the reasons for the steps in the following proof:

GIVEN



Isosceles $\triangle ABC$
with

$$|AB| = |AC|$$

$$B \hat{=} A \hat{=} D$$

$E \in$ Interior $\angle DAC$

such that $|\angle DAE| = \frac{1}{2} |\angle DAC|$.

($\Rightarrow E, C$ on same side
of AB).

TO PROVE $AE \parallel BC$

$$1. \quad 2 |\angle ABC| = 180^\circ - |\angle BAC| = |\angle DAC| = 2 |\angle DAE|.$$

$$2. \quad |\angle ABC| = |\angle DAE|.$$

3. $\angle DAE$ and $\angle ABC = \angle DBC$ are corresponding angles for the two lines AE & BC cut by the transversal $AB = DB$

4. Therefore $AE \parallel BC$.

Solutions to Quiz 2

2a. We shall give the reasons for the statements in order:

- (1) The angle sum of a triangle is 180° (use this twice).
- (2) We are given that $AB \perp BD$ and $AC \perp CD$.
- (3) This is true by the Vertical Angle Theorem.
- (4) Subtract the second and third equations from the first one. ■

2b. We shall give the reasons for the statements in order:

- (1) The first equation is true because the angle sum of a triangle is 180° and $|\angle ABC| = |\angle ACB|$ (given), the second is true by the Supplement Postulate, and the third is true because $[AE$ bisects $|\angle DAC|$ (also given).
- (2) In the previous line, divide the outside expressions (which are equal) by 2.
- (3) Since E is given as lying in the interior of $|\angle DAC|$, the points E and C lie on the same side of AC ; since $D * A * C$, the angles in question are corresponding angles.
- (4) If two lines are cut by a transversal such that the corresponding angles have equal measures, then the original two lines are parallel. ■