

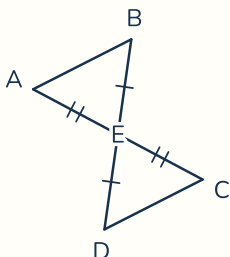
Geometry — Congruence proofs

Name: _____

Date: _____

Read each proof and choose the missing reason.

1



Given E is the midpoint of BD; $AE \cong CE$

Prove $\triangle AEB \cong \triangle CED$

Statements

Reasons

1. $BE \cong DE$

?

2. $\angle AEB \cong \angle CED$

Vertical Angles

3. $AE \cong CE$

Given

4. $\triangle AEB \cong \triangle CED$

SAS

Reason for step 1:

Given

Reflexive Property

Vertical Angles

Alternate Interior Angles

Definition of Midpoint

SSS

SAS

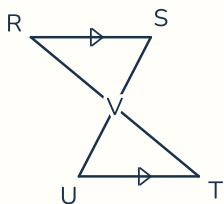
ASA

AAS

HL

Definition of Perpendicular

2



Given $RS \parallel UT$; $RS \cong UT$

Prove $\triangle RSV \cong \triangle TUV$

Statements

Reasons

1. $\angle SRV \cong \angle UTV$

?

2. $\angle RSV \cong \angle TUV$

Alternate Interior Angles

3. $RS \cong UT$

Given

4. $\triangle RSV \cong \triangle TUV$

ASA

Reason for step 1:

Given

Reflexive Property

Vertical Angles

Alternate Interior Angles

Definition of Midpoint

SSS

SAS

ASA

AAS

HL

Definition of Perpendicular



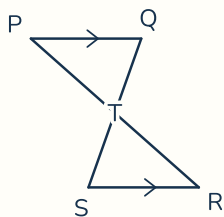
Geometry — Similarity proofs

Name: _____

Date: _____

Read each proof and choose the missing reason.

1



Given $PQ \parallel SR$

Prove $\triangle PQT \sim \triangle RST$

Statements

Reasons

1. $\angle PTQ \cong \angle RTS$

Vertical Angles

2. $\angle QPT \cong \angle SRT$

?

3. $\triangle PQT \sim \triangle RST$

AA ~

Reason for step 2:

Given

Reflexive Property

Vertical Angles

Corresponding Angles

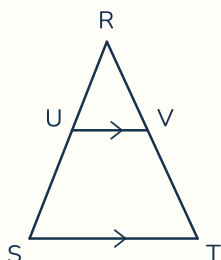
Alternate Interior Angles

AA ~

SAS ~

SSS ~

2



Given $UV \parallel ST$

Prove $\triangle RUV \sim \triangle RST$

Statements

Reasons

1. $\angle R \cong \angle R$

?

2. $\angle RUV \cong \angle RST$

Corresponding Angles

3. $\triangle RUV \sim \triangle RST$

AA ~

Reason for step 1:

Given

Reflexive Property

Vertical Angles

Corresponding Angles

Alternate Interior Angles

AA ~

SAS ~

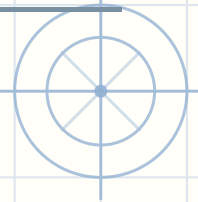
SSS ~



Write a triangle proof — Write a congruence proof

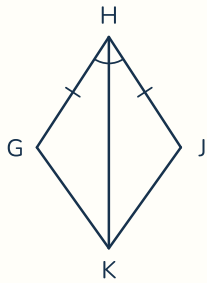
Name: _____

Date: _____



Write a full two-column proof for each. Reasons may be used more than once.

1



Given $GH \cong JH$; $\angle GHK \cong \angle JHK$

Prove $\triangle GHK \cong \triangle JHK$

Statements

Reasons

1. $GH \cong JH$

Given

2. $\angle GHK \cong \angle JHK$

Given

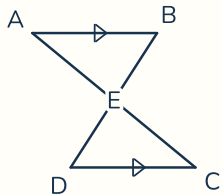
3. $HK \cong HK$

Reflexive Property

4. $\triangle GHK \cong \triangle JHK$

SAS

2



Given $AB \parallel DC$; $AB \cong DC$

Prove $\triangle ABE \cong \triangle CDE$

Statements

Reasons

1.

2.

3.

4.



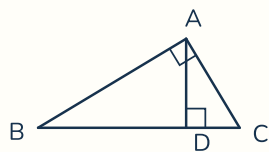
Write a triangle proof — Write a similarity proof

Name: _____

Date: _____

Write a full two-column proof that the triangles are similar.

1



Given $\angle BAC$ is a right angle; $AD \perp BC$

Prove $\triangle DAC \sim \triangle ABC$

Statements

Reasons

1. $\angle C \cong \angle C$

Reflexive Property

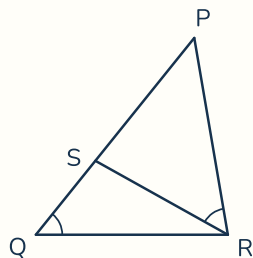
2. $\angle ADC \cong \angle BAC$

Right angles are congruent

3. $\triangle DAC \sim \triangle ABC$

AA ~

2



Given $\angle PRS \cong \angle Q$

Prove $\triangle PRS \sim \triangle PQR$

Statements

Reasons

1.

2.

3.



Power Pack · Geometry proofs — Answer key

Congruence proofs

1. $\triangle AEB \cong \triangle CED$ (E is the midpoint of BD, $AE \cong CE$), step 1: Definition of Midpoint

2. $\triangle RSV \cong \triangle TUV$ ($RS \parallel UT$, $RS \cong UT$), step 1: Alternate Interior Angles

Similarity proofs

1. $\triangle PQT \sim \triangle RST$ ($PQ \parallel SR$), step 2: Alternate Interior Angles

2. $\triangle RUV \sim \triangle RST$ ($UV \parallel ST$), step 1: Reflexive Property

Write a congruence proof

1. $\triangle GHK \cong \triangle JHK$ — 1. $GH \cong JH$ — Given; 2. $\angle GHK \cong \angle JHK$ — Given; 3. $HK \cong HK$ — Reflexive Property; 4. $\triangle GHK \cong \triangle JHK$ — SAS

2. $\triangle ABE \cong \triangle CDE$ — 1. $\angle BAE \cong \angle DCE$ — Alternate Interior Angles; 2. $\angle ABE \cong \angle CDE$ — Alternate Interior Angles; 3. $AB \cong DC$ — Given; 4. $\triangle ABE \cong \triangle CDE$ — ASA

Write a similarity proof

1. $\triangle DAC \sim \triangle ABC$ — 1. $\angle C \cong \angle C$ — Reflexive Property; 2. $\angle ADC \cong \angle BAC$ — Right angles are congruent; 3. $\triangle DAC \sim \triangle ABC$ — AA ~

2. $\triangle PRS \sim \triangle PQR$ — 1. $\angle P \cong \angle P$ — Reflexive Property; 2. $\angle PRS \cong \angle Q$ — Given; 3. $\triangle PRS \sim \triangle PQR$ — AA ~

