

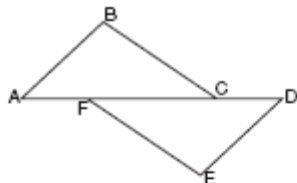
NAME: _____

G.G.27: Write a proof arguing from a given hypothesis to a given conclusion

1. 060229b, P.I. G.G.27

Complete the partial proof below for the accompanying diagram by providing reasons for steps 3, 6, 8, and 9.

Given: \overline{AFCD}
 $\overline{AB} \perp \overline{BC}$
 $\overline{DE} \perp \overline{EF}$
 $\overline{BC} \parallel \overline{FE}$
 $\overline{AB} \cong \overline{DE}$

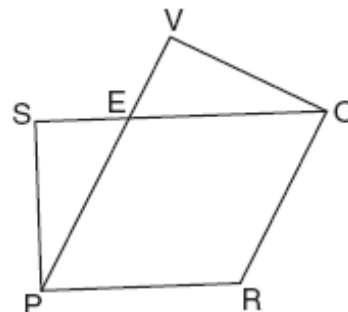


Prove: $\overline{AC} \cong \overline{FD}$

Statements	Reasons
1 \overline{AFCD}	1 Given
2 $\overline{AB} \perp \overline{BC}$, $\overline{DE} \perp \overline{EF}$	2 Given
3 $\angle B$ and $\angle E$ are right angles.	3 _____
4 $\angle B \cong \angle E$	4 All right angles are congruent.
5 $\overline{BC} \parallel \overline{FE}$	5 Given
6 $\angle BCA \cong \angle FED$	6 _____
7 $\overline{AB} \cong \overline{DE}$	7 Given
8 $\triangle ABC \cong \triangle DEF$	8 _____
9 $\overline{AC} \cong \overline{FD}$	9 _____

2. 010934b, P.I. G.G.27

Given: $PROE$ is a rhombus, \overline{SEO} , \overline{PEV} ,
 $\angle SPR \cong \angle VOR$



Prove: $\overline{SE} \cong \overline{EV}$

3. 080834b, P.I. G.G.27

A tricolored flag is made out of a rectangular piece of cloth whose corners are labeled A , B , C , and D . The colored regions are separated by two line segments, \overline{BM} and \overline{CM} , that meet at point M , the midpoint of side \overline{AD} . Prove that the two line segments that separate the regions will always be equal in length, regardless of the size of the flag.

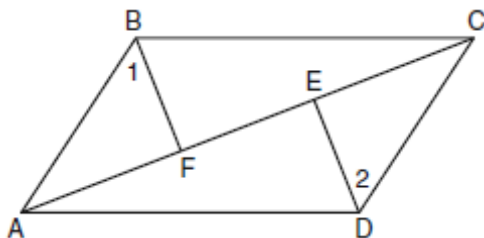
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4. 010233b, P.I. G.G.27

Prove that the diagonals of a parallelogram bisect each other.

5. 080938ge, P.I. G.G.27

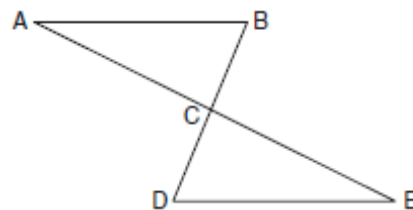
Given: Quadrilateral $ABCD$, diagonal \overline{AFEC} ,
 $\overline{AE} \cong \overline{FC}$, $\overline{BF} \perp \overline{AC}$, $\overline{DE} \perp \overline{AC}$, $\angle 1 \cong \angle 2$
Prove: $ABCD$ is a parallelogram.



6. 060938ge, P.I. G.G.27

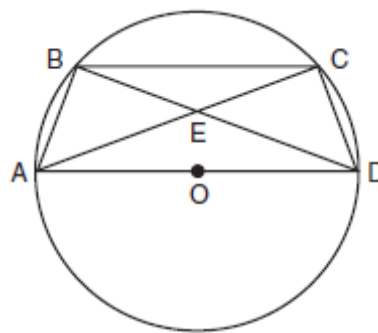
Given: $\triangle ABC$ and $\triangle EDC$, C is the midpoint
of \overline{BD} and \overline{AE}

Prove: $\overline{AB} \parallel \overline{DE}$



7. 060934b, P.I. G.G.27

In the accompanying diagram of circle O ,
 \overline{AD} is a diameter with \overline{AD} parallel to chord
 \overline{BC} , chords \overline{AB} and \overline{CD} are drawn, and
chords \overline{BD} and \overline{AC} intersect at E .
Prove: $\overline{BE} \cong \overline{CE}$



G.G.27: Write a proof arguing from a given hypothesis to a given conclusion

[4] The reasons for all four steps are correct, such as:

Step 3: Perpendicular line segments form right angles.

Step 6: If two parallel lines are cut by a transversal, the alternate interior angles are congruent.

Step 8: $AAS \cong AAS$.

Step 9: Corresponding parts of congruent triangles are congruent.

[3] The reasons for only three steps are correct.

[2] The reasons for only two steps are correct.

[1] The reason for only one step is correct.

[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously

[1] incorrect procedure.

[6] A complete and correct proof that includes a conclusion is written.

[5] A proof is written that demonstrates a thorough understanding of the method of proof and contains no conceptual errors, but one statement and/or reason is missing or is incorrect.

or [5] $\triangle SEP \cong \triangle VEO$ is proven, but no further correct work is shown.

[4] A proof is written that demonstrates a good understanding of the method of proof and contains no conceptual errors, but two statements and/or reasons are missing or are incorrect.

[3] A proof is written that demonstrates a good understanding of the method of proof, but one conceptual error is made.

[2] Some correct relevant statements about the proof are made, but three or four statements and/or reasons are missing or are incorrect.

[1] Only one correct statement and reason are written.

[0] The "given" and/or the "prove" statements are rewritten in the style of a formal proof, but no further correct relevant statements are written.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[2] obviously incorrect procedure.

- [6] A complete and correct proof is written.
[5] $\triangle BAM \cong \triangle CDM$ is proven, but no further correct work is shown.
or [5] A proof is written that demonstrates a thorough understanding of the method of proof and contains no conceptual errors, but one statement and/or reason is missing or is incorrect.
[4] A proof is written that demonstrates a good understanding of the method of proof and contains no conceptual errors, but two statements and/or reasons are missing or are incorrect.
3] A proof is written that demonstrates a good understanding of the method of proof, but one conceptual error is made.
[2] Some correct relevant statements about the proof are made, but three or four statements and/or reasons are missing or are incorrect.
[1] Only one correct statement and reason are written.
[0] The "given" and/or the "prove" statements are rewritten in the style of a formal proof, but no further correct relevant statements are written.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
[3]

- [6] Either a correct Euclidean proof is written, with a concluding statement that the diagonals bisect each other, or a correct analytic proof using coordinate geometry is written, with a concluding statement that the diagonals bisect each other.
[5] One reason is omitted or incorrect.
or [5] Appropriate work is shown, but one computational error is made.
[4] The appropriate triangles are proven to be congruent, but the corresponding parts and a final statement that indicates why the diagonals are bisected are omitted.
or [4] Appropriate work is shown, but two computational errors are made.
or [4] A correct analytic proof using coordinate geometry is written, but no concluding statement is made.
[3] An appropriate conclusion is drawn, including a statement that indicates why the diagonals are bisected; but only a partial proof is written, with two steps missing, and errors in the statements or reasons are made.
or [3] An analytic proof using coordinate geometry with more than two errors is written, but an appropriate concluding statement is made.
or [3] The diagram in an analytic proof is labeled incorrectly or numerically, but the rest of the proof is correct.
[2] Statements for the Euclidean proof are written, but no valid reasons are given.
or [2] A congruence proof is written with some valid statements and reasons, but a concluding statement that the diagonals bisect each other is not made.
[1] A correctly labeled diagram for a Euclidean proof is shown, but no proof is written.
or [1] An analytic proof using coordinate geometry with more than two errors is written, but no concluding statement is made.
[0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
[4]

- [6] A complete and correct proof that includes a concluding statement is written.
- [5] A proof is written that demonstrates a thorough understanding of the method of proof and contains no conceptual errors, but one statement or reason is missing or is incorrect.
- [4] A proof is written that demonstrates a good understanding of the method of proof and contains no conceptual errors, but two statements or reasons are missing or are incorrect.
- [3] A proof is written that demonstrates a good understanding of the method of proof, but one conceptual error is made.
- or [3] $\triangle AFB \cong \triangle CED$ is proven, but no further correct work is shown.
- [2] A proof is written that demonstrates a method of proof, but one conceptual error is made, and one statement or reason is missing or is incorrect.
- or [2] Some correct relevant statements about the proof are made, but three or four statements or reasons are missing or are incorrect.
- [1] Only one correct relevant statement and reason are written.
- [0] The "given" and/or the "prove" statements are rewritten in the style of a formal proof, but no further correct relevant statements are written.
- or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
- [5] obviously incorrect procedure.

- [6] A complete and correct proof that includes a concluding statement is written.
- [5] A proof is written that demonstrates a thorough understanding of the method of proof and contains no conceptual errors, but one statement or reason is missing or incorrect, or no concluding statement is written.
- or [5] $\angle A \cong \angle E$ or $\angle B \cong \angle D$ is proven, but no further correct work is shown.
- [4] A proof is written that demonstrates a good understanding of the method of proof and contains no conceptual errors, but two statements or reasons are missing or incorrect.
- or [4] $\triangle ABC \cong \triangle EDC$ is proven, but no further correct work is shown.
- [3] A proof is written that demonstrates a good understanding of the method of proof, but one conceptual error is made.
- [2] Some correct relevant statements about the proof are made, but three or four statements or reasons are missing or incorrect.
- [1] Only one correct statement and reason are written.
- [0] The given and/or the prove statements are rewritten in the style of a formal proof, but no further correct relevant statements are written.
- or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an obviously incorrect procedure.
- [6] obviously incorrect procedure.

[6] A complete and correct proof that includes a conclusion is written.

[5] A proof is written that demonstrates a thorough understanding of the method of proof and contains no conceptual errors, but one statement and/or reason is missing or is incorrect.

or [5] $\triangle BEA \cong \triangle CED$ is proven or $\triangle BEC$ is proven to be isosceles, but no further correct work is shown.

[4] A proof is written that demonstrates a good understanding of the method of proof, but two statements and/or reasons are missing or are incorrect.

[3] A proof is written that demonstrates a good understanding of the method of proof, but one conceptual error is made.

[2] Some correct relevant statements about the proof are made, but three or four statements and/or reasons are missing or are incorrect.

or [2] A proof is written that demonstrates understanding of the method of proof, but one conceptual error is made, and one statement or reason is missing or is incorrect.

[1] Only one correct relevant statement and reason are written.

[0] The "given" and/or the "prove" statements are rewritten in the style of a formal proof, but no further correct relevant statements are written.

or [0] A zero response is completely incorrect, irrelevant, or incoherent or is a correct response that was obtained by an

[7] obviously incorrect procedure.