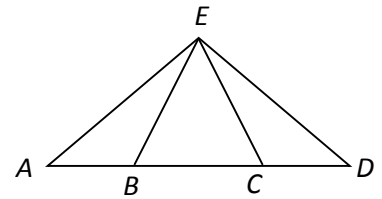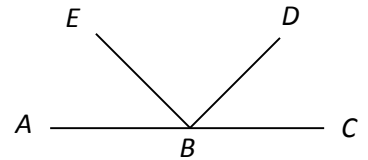Name:_____   Date:_____

Geometry HW: Intro Geometry Proofs - Review

1. Given that $\angle AEB \cong \angle CED$, which is **not** a valid conclusion?
    (1) $m\angle AEB = m\angle CED$ (2) $\angle AEC \cong \angle BED$
    (3) $m\angle AEC = m\angle BED$ (4) $\overline{AE} \cong \overline{ED}$

2. If *A*, *B*, and *C* are collinear and $\angle ABE$ is complementary to $\angle CBD$, then $m\angle EBD$
    (1) is less than 90   (2) equals 90
    (3) is greater than 90   (4) can not be determined.

3. Give a suitable reason for step 2:   **Statement**   **Reason**
    (No diagram for this problem.)   1. $\overline{AB} \perp \overline{BC}$ 1. Given
                                          2. $\angle ABC$ is a right angle 2.

Using the diagram below, draw a valid conclusion for each set of givens and give a reason.
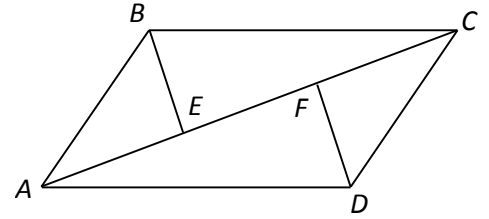
4. Given: $\overline{BE}$ bisects $\angle ABC$

5. Given: $\angle BAE \cong \angle DCF$; $\angle DAE \cong \angle BCF$

6. Given: $\overline{AEFC}$, $\overline{AE} \cong \overline{EF}$; $\overline{EF} \cong \overline{FC}$

7. Given: $m\angle ABE + m\angle CBE = 120$; $m\angle ADF = m\angle CBE$

8. Given: $\overline{FD}$ bisects $\overline{EC}$
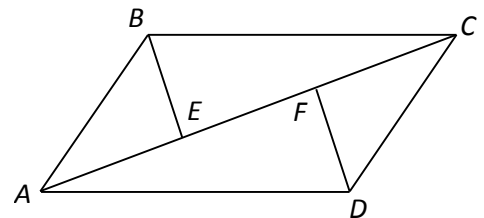
Using the same diagram, write complete proofs for the following. (Note: each problem is independent of the others.)
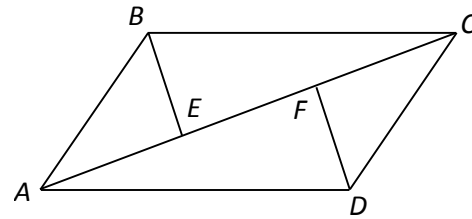
9. Given: $\overline{BE} \perp \overline{AE}$ and $\overline{DF} \perp \overline{CF}$
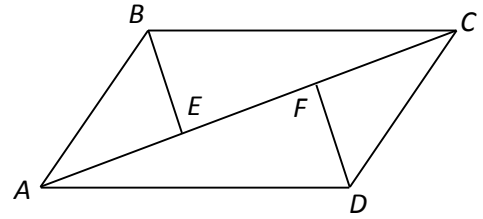
Prove: $\angle AEB \cong \angle CFD$

10. Given: $\angle ABC \cong \angle CDA$; $\angle ABE \cong \angle CDF$

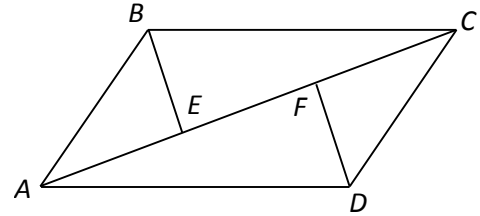Prove: $\angle CBE \cong \angle ADF$

11. Given: $\overline{AEFC}$, $\overline{AE} \cong \overline{FC}$

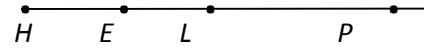   Prove: $\overline{AF} \cong \overline{EC}$

12. Given: $m\angle BAE + m\angle ABE = m\angle AEB$; $m\angle AEB = 90$

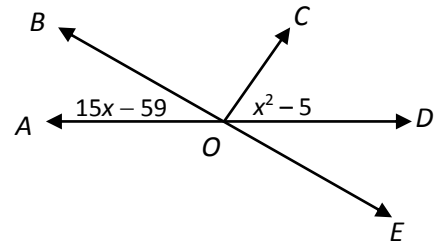   Prove: $\angle BAE$ and $\angle ABE$ are complementary.

Problems #13 - 15 are arithmetic/algebraic problems, **not proofs**.

13. In the diagram at right, *L* is the midpoint of $\overline{HP}$ and *E* is the midpoint of $\overline{HL}$. If *EL* = 12, find the length of *EP*.

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•——————•————•——————————————•———
H       E    L               P
```

14. In the diagram at right $\overline{AOD}$, $\overline{BOE}$ and $\overline{OC} \perp \overline{BOE}$.
Find the numerical measure of ∠*AOE*.
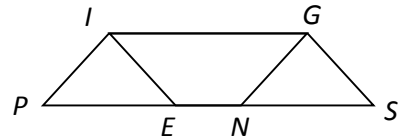
```
    B              C
      ↖          ↗
A ←——— 15x − 59  / x² − 5 ——→ D
            O
              ↘
                E
```

15. If $\overline{BD}$ bisects ∠*ABC*, *m*∠*ABD* = 2*x* + 5 and *m*∠*ABC* = 5*x* − 6, find *m*∠*CBD*. (No diagram.)

Write a "statement-reason" geometry proof for each of the following.

16.   Given: $\overline{PENS}$, $\overline{PN} \cong \overline{IG}$, $\overline{IG} \cong \overline{ES}$

       Prove: $\overline{PE} \cong \overline{NS}$

17. Given: $\overline{RID}$, $\overline{MIP}$, $\overline{IR}$ bisects $\angle BIM$, $\overline{IG} \perp \overline{RID}$

    Prove: $\angle BIG \cong \angle PIG$