

Name: _____ Date: _____ Hour: _____

INDIVIDUAL PRACTICE: CONJECTURES AND COUNTEREXAMPLES

Fill in the blank:

1. To prove a conjecture false, we must show at least one counterexample

State whether each conjecture is *true* or *false*. If it is false, give a counter example.

2. The product of an odd integer and an even integer is odd.
False Counterexample: $3 * 6 = 18$

3. The perfect squares alternate between odd and even numbers.
True 4, 9, 16, 25, 36, 49, 64, 81, 100

Determine whether each conjecture is *true* ^{or} *false*. Give a counter example for any **false** conjecture.
You **MUST** draw a picture for your counter example.

4. **Given:** Points A, B, and C are collinear.
Conjecture: $AB + BC = AC$

False



5. **Given:** $\angle R$ and $\angle S$ are supplementary and the same $\angle R$ and $\angle T$ are supplementary.
Conjecture: $\angle T$ and $\angle S$ are congruent.

True

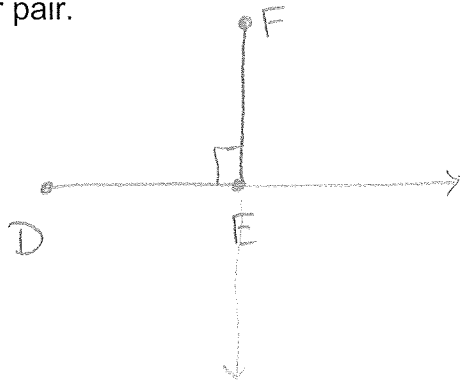
6. **Given:** $\overline{DE} \perp \overline{EF}$
Conjecture: $\angle DEF$ is a right angle.

True

1. Given: $\overline{DE} \perp \overline{EF}$

Conjecture: $\angle DEF$ is a linear pair.

False

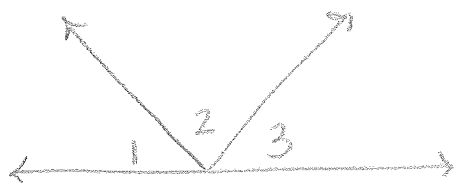


$\angle DEF$ is a right angle

2. Given: $\angle 1 + \angle 2 + \angle 3 = 180$

Conjecture: $\angle 1$, $\angle 2$ and $\angle 3$ are interior angles of a triangle.

False



All $\angle 1$, $\angle 2$, $\angle 3$ make a straight angle

3. Given: $\angle 1 + \angle 2 = 180$

Conjecture: $\angle 1$ and $\angle 2$ are linear pairs

False



4. Given: $\angle 1$ and $\angle 2$ are complementary

Conjecture: adjacent angles $\angle 1$ and $\angle 2$ form a right angle

False

