# Unit 4 Reasoning and Angle Relationships

| Date | Target | Assignment | Done! |
|------|--------|------------|-------|
| M 10-16 | 4.1 | 4.1 Day 1 Worksheet | |
| T 10-17 | 4.1 | 4.1 Day 2 Worksheet | |
| W 10-18 | Quiz | Quiz 4.1 | |
| R 10-19 | 4.2 | 4.2 Day 1 Worksheet | |
| F 10-20 | 4.2 | 4.2 Day 2 Worksheet | |
| M 10-23 | 4.2 | 4.2 Day 3 Worksheet | |
| T 10-24 | Quiz | Quiz 4.2 | |
| W 10-25 | Rev | Unit 4 Test Review | |
| R 10-26 | Test | Unit 4 Test | |

## Target 4.1: Use deductive reasoning to make conclusions

## Target 4.2: Use properties of equality and congruence to prove relationships about angles

*NAME:* _____

# 4.1 – Deductive Reasoning
## Target 1 – Use deductive reasoning to make conclusions

### Vocabulary
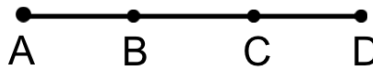**Deductive Reasoning:** _____

_____

### Example 1: Use deductive reasoning to find the solution to an algebraic equation

*Solve for the variable X*
*Given:* $3(x + 5) = 21$

| Statements | Reason |
|---|---|
|  |  |
|  |  |
|  |  |
|  |  |

### Example 2: Use deductive reasoning to write a two-column proof

*Given: A, B, C, and D are collinear*
         *mAB = mCD*
*Prove: mAC = mBD*



| Statements | Reason |
|---|---|
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

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## Annotate Here

*Reasons to Consider:*

*1. Distributive Property*
*2. Division Property of Equality*
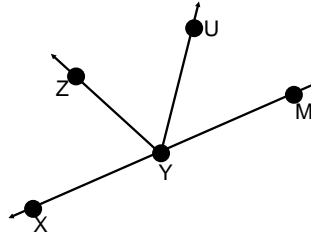*3. Given*
*4. Subtraction Property of Equality*

*Reasons to Consider:*
*(may use a reason more than once)*

*1. Segment Addition Postulate*
*2. Given*
*3. Substitution Property*
*4. Transitive Property of Equality*

## *4.2 – Reasoning in Geometry*
## *Target 2 – Use properties of equality and congruence to prove relationships about angles*

**Vocabulary**

**Complementary Angles:** _____

_____

**Adjacent Angles:** _____

_____

**Supplementary Angles:** _____

_____

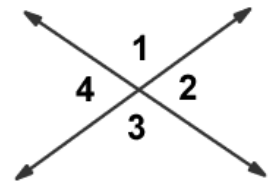**Linear Pair:** _____

_____

**Vertical Angles:** _____

_____

*Draw and label the various angle relationships below*

| Annotate Here |
|---|

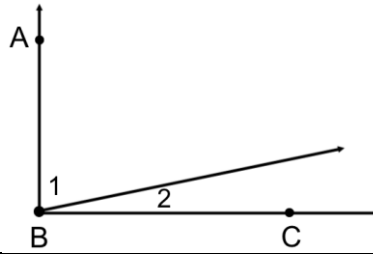*Name both pairs of vertical angles*

1.

2.

### *More Properties/Definitions (NOT IN VIDEO- FILL OUT ON OWN)*

| Linear Pair Postulate | If two angles form a linear pair, then they are -_____. |
|---|---|
| Definition of Complimentary Angles | Two Angles that add up to _____ |
| Definition of Supplementary Angles | Two Angles that add up to _____. |
| Definition of Perpendicular Lines | Perpendicular Lines form _____ |
| Definition of Right Angles | An angle measuring _____ |

## Example 1: Prove angles are complementary

*Given: AB is perpendicular to BC ($\overline{AB} \perp \overline{BC}$)*
*Prove: ∠1 and ∠2 are complementary angles*

| Statements | Reason |
|------------|--------|
|            |        |
|            |        |
|            |        |
|            |        |
|            |        |
|            |        |

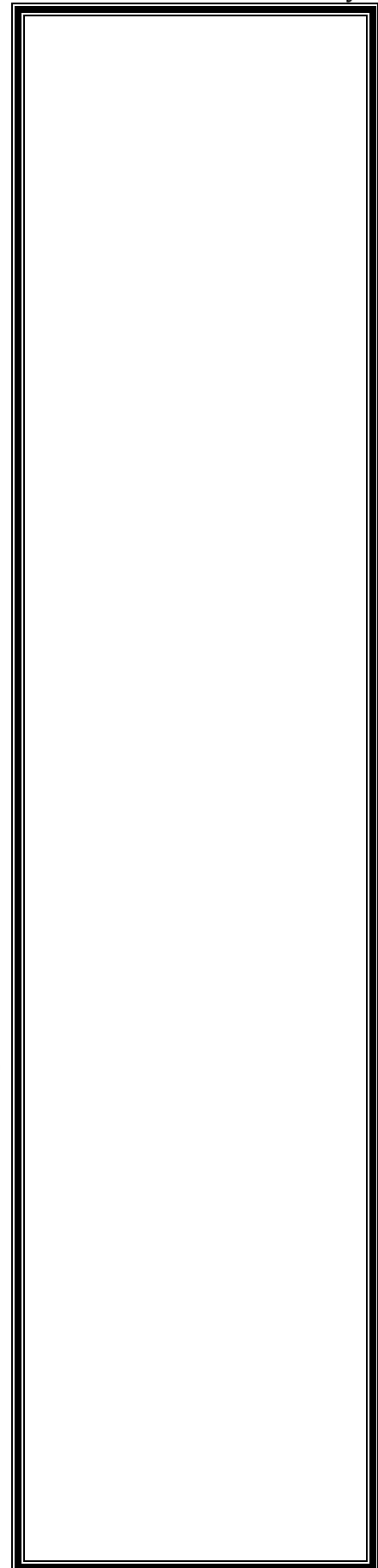## Example 2: Use properties of complementary and supplementary angles

*Find the $m\angle DBC$ and $m\angle CAB$.*
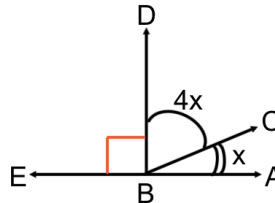
## ✎ YOU TRY NOW!

1)  If ∠R is supplementary to a 47° angle and ∠S is supplementary to a 56° angle, could they be vertical angles? **Explain**.

2)  Make sure you understand all of the vocabulary in this lesson. Below, draw and label supplementary angles, complimentary angles, and vertical angles.

**Supplementary Angles**    **Complimentary Angles**    **Vertical Angles**

1. No, the two angles are supplementary to two different measurements and vertical angles must be congruent.
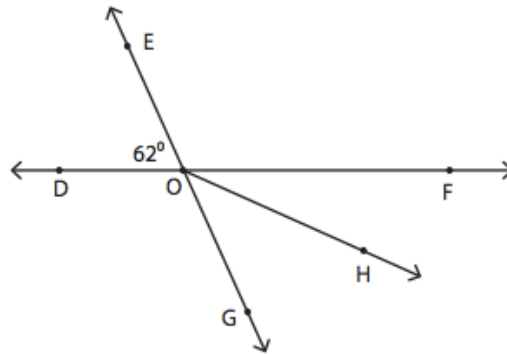
YouTryNow

5

## ✎ *YOU TRY NOW!* (cont.)

3) *Use the diagram below to answer the following questions using property notation*

a) DF and EG intersects at point O. Find the $m\angle EOF$.
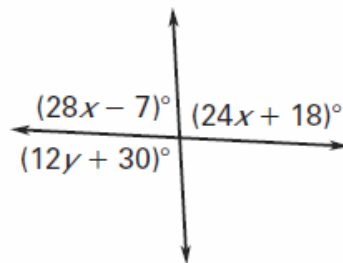
b) Name two pairs of vertical angles.



c) Find the $m\angle GOF$.

d) Name the angles adjacent to $\angle GOH$.

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4)  Given that ∠3 is a <u>supplement</u> of ∠4 and ∠4 = 41˚, find m∠3.

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5) Find the value of x and y.



$(28x - 7)°$   $(24x + 18)°$

$(12y + 30)°$

*5) x = 3.25; y = 5.5*

*4) 139°*

*d) ∠FOH & ∠GOD*     *c) 62°*     *b) ∠EOD & ∠FOG; ∠DOG & ∠FOE*     *3. a) 118°*

**YouTryNow**