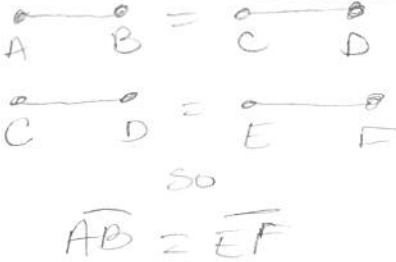





1.4 Equalities & Inequalities (textbook pages 7 – 9)

Two magnitudes (such as a and b) can have one of three relationships.

- $a = b$ read “ a equals b ” (this is an equality or equation)
- $a > b$ read “ a is greater than b ” (this is an inequality)
- $a < b$ read “ a is less than b ” (this is an inequality)

Principle	Illustration
Principle 4: Quantities (lines) equal to the same quantity (line) are equal to each other.	 $\overline{AB} = \overline{CD}$ $\overline{CD} = \overline{EF}$ <p style="text-align: center;">so</p> $\overline{AB} = \overline{EF}$
Principle 5: The whole is equal to the sum of all its parts.	 $\overline{AB} + \overline{BC} + \overline{CD} = \overline{AD}$
Principle 6: The whole is greater than any of its parts.	 $\overline{AC} > \overline{AB}$ $\overline{AC} > \overline{BC}$
Principle 7: If equals are added to equals, the sums are equal.	 $\overline{AB} = \overline{CD} \quad \overline{XY} = \overline{YZ}$ <p style="text-align: center;">so</p> $\overline{AB} + \overline{XY} = \overline{CD} + \overline{YZ}$

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Date: _____

1.4 Equalities & Inequalities (textbook pages 7-9)

Principle 8: If equals are subtracted from equals, then the remainders are equal.

$$\overline{AB} = \overline{CD} \quad \overline{XY} = \overline{YZ}$$

so

$$\overline{AB} - \overline{XY} = \overline{CD} - \overline{YZ}$$

Principle 9: Doubles of equals are equal.

$$\overline{AB} = \overline{CD}$$

so

$$2 \cdot \overline{AB} = 2 \cdot \overline{CD}$$

Principle 10: Halves of equals are equal.

$$\overline{AB} = \overline{CD}$$

so

$$\frac{1}{2} \overline{AB} = \frac{1}{2} \overline{CD}$$

Principle 11: If the first of three quantities is greater than the second, and the second is greater than the third, then the first is greater than the third.

if $\overline{AB} > \overline{BC}$

and $\overline{BC} > \overline{CD}$

then $\overline{AB} > \overline{CD}$