Name _____ Class _____ Date _____

Reteaching 2-5

Equations and Problem Solving

OBJECTIVE: Model distance-rate-time problems **MATERIALS:** None

A table is useful in organizing information from a real-world problem.
Below are examples of tables for several types of application problems.

	Rate × Time = Distance		
Object 1			
Object 2			

	Length × Width = Area		
Rectangle 1			
Rectangle 2			

Example

An airplane takes off from an airport at 7:00 A.M. traveling at a rate of 350 mi/h. Two hours later, a jet takes off from the same airport following the same flight path at 490 mi/h. In how many hours will the jet catch up with the airplane?

Define: Let t = the time the airplane travels.
Let $t - 2$ = the time the jet travels.

Set up table:

	Rate	× Time	= Distance
Airplane	350	t	$350t$
Jet	490	$t - 2$	$490(t - 2)$

Relate: distance traveled by airplane = distance traveled by jet

Write:

$350t = 490(t - 2)$

$350t = 490t - 980$ ← **Use the distributive property.**

$350t - 490t = 490t - 980 - 490t$ ← **Subtract 490*t* from each side.**

$-140t = -980$ ← **Combine like terms.**

$\frac{-140t}{-140} = \frac{-980}{-140}$ ← **Divide each side by −140.**

$t = 7$ ← **Simplify.**

Final answer: The jet will catch up with the airplane in 5 hours.

Exercises

Solve each problem.

1. Mary leaves her house at noon, traveling in her car at 45 mi/h. Later, Mary's brother Joe leaves their house and travels in the same direction at 60 mi/h. If Joe leaves at 2:00 P.M., at what time will he catch up with Mary?
2. Mike leaves school on his bike at 1:00 P.M., traveling at 12 mi/h. Janis leaves the same school one quarter of an hour later, traveling at 16 mi/h in the same direction. At what time will Janis catch up with Mike?

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