Applications of Rational Equations **(PAGE 259 #10, 11, 13, 14, 16, 17)**

Rational equations can be used to solve various types of word problems.

For the purposes of this course, we will concentrate on three different types:

1. Time – comparing at least two different individual times working together

2. Speed – comparing two different d/v/t, usually with/without current or wind

3. Money – comparing shares based on more/less participants

Machine A can get the job done in 5 hours. Machine B can get it done in 3 hours. How long will it take to get the job done if both machines work together?

- What share of the job does each get done in 1 hour?
- What fraction of the entire job is completed in 1 hour?
- What equation can be used to represent the total time if both are working together?

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1. Two hoses fill a pool in 2 hours. If only hose A is used, the pool fills in 3 hours. How long would it take for hose B to fill the pool on its own?

2. A plane faces a head wind of 70km/h and the trip takes 4 hours. In the same wind, the return trip takes only 3 hours. Determine the speed of the plane (assume the same plane speed in both directions).

- What remains constant in each direction, the total speed, time, or distance?
- How can this be represented for the outbound trip?
- How can this be represented for the return trip?
- What equation can be used to determine the planes speed without any wind?

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2. John's family travels 300 km from their home to a family reunion. His cousin Susan and her family take the same amount of time to travel 200 km from their home. Determine the speed of both vehicles given that one of the vehicles travels 30 km/h faster than the other.

The hockey team has the rink rented for practice at a cost of $300. They decide to invite some friends for a game of shinny hockey. When 10 friends decide to join them, each person's share is reduced by $8. How many players are on the actual hockey team?

- What fraction can be used to represent the original share?
- What fraction can be used to represent the new share?
- How do both shares relate to each other?
- What equation can be used to compare these shares to each other?

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3. A school group needed to collect $500 for a field trip. When 10 people backed out, the share went up by $2.50. How many people actually went on the field trip?