

1. Calculate: 
$$\frac{\left(\frac{5}{12} - \frac{1}{4}\right) \times 3}{\left(\frac{3}{4} - \frac{1}{2}\right) \times 2} =$$

### *Joint Effort Problems*

2. Cities **A** and **B** are 280 km apart. At noon a bus leaves from **A** for **B** moving 50 km/h. At the same time a truck leaves from **B** for **A** moving 70 km/h. When will ...

a). ... the bus arrive at B? \_\_\_\_\_

b). ... the truck arrive at A? \_\_\_\_\_

c). ... the bus meet the truck? \_\_\_\_\_

3. In an airport a boarding gate is 800 meters away from the passport control (1 km = 1000 m). A conveyor tape connecting the passport control and the boarding gate in an airport moves 3 km/h. A man walks 5 km/h. How long will it take the man to walk to ...

a). ... walk to the boarding gate on the floor? \_\_\_\_\_

b). ... get there by the conveyor tape if the man just stands on it? \_\_\_\_\_

c). ... to walk to the boarding gate over the conveyor tape? \_\_\_\_\_

4. An old tractor can plow a corn field in 15 days. A newer model can do the same job in 10 days. How long will it take the two tractors to do the work together?

**Mixed Fractions vs Improper Fractions:**

5. Calculate:

$$2\frac{2}{3} + 1\frac{7}{9} =$$

$$2\frac{2}{3} - 1\frac{7}{9} =$$

$$2\frac{2}{3} \cdot 1\frac{7}{9} =$$

$$2\frac{2}{3} : 1\frac{7}{9} =$$

6. Solve the equations:

**a).**  $2 \cdot (2x - 3) - (5 - x) = (6x - 14) : 2$

**b).**  $12 - |3x + 4| = 7$

2. There are three vectors:  $\vec{e} = (-1, 3)$ ,  $\vec{a} = (2, 1)$ , and  $\vec{g} = (1, -2)$ . Calculate the coordinates of the following vectors:

$$\frac{1}{2}\vec{e} = ( \quad , \quad )$$

$$\frac{3}{2}\vec{a} = ( \quad , \quad )$$

$$-2\vec{g} = ( \quad , \quad )$$

$$\vec{e} + \vec{g} = ( \quad , \quad )$$

$$\vec{a} - \vec{g} = ( \quad , \quad )$$

$$\vec{a} - 2\vec{g} = ( \quad , \quad )$$