Notes for Lesson 2-2: Solving Equations by multiplying or dividing

2-2.1 - Solving equations by using multiplication

Solving an equation with multiplication or division is similar to solving an equation with addition or subtraction. Use the inverse operation to undo the operation on the variable.

Remember an equation is like a balanced scale. To keep it balanced, perform the same operation to both sides.

Example: Solve each equation

\[-4 = \frac{k}{-5}\]
\[\frac{-5}{-5} = \frac{k}{-5}\]
\[20 = k\]

\[\frac{m}{3} = 1.5\]
\[\frac{m}{3} (3) = 1.5(3)\]
\[m = 4.5\]

2-1.2 - Solving equations by using division

Example: Solve each equation

\[-7x = 56\]
\[\frac{-7}{-7} = \frac{56}{-7}\]
\[x = -8\]

\[13 = 2w\]
\[\frac{13}{2} = \frac{2w}{2}\]
\[w = 6.5\]

Do Practice B #'s 1, 2, 5, 9

2-1.3 - Solving equations that contain fractions

Example: Solve each equation

\[\frac{5}{9} v = 35\]
\[\left(\frac{9}{5}\right) \frac{5}{9} v = 35 \left(\frac{9}{5}\right)\]
\[v = 63\]

\[\frac{5}{2} = \frac{4y}{3}\]
\[\left(\frac{3}{4}\right) \frac{5}{2} = \left(\frac{4y}{3}\right) \left(\frac{3}{4}\right)\]
\[15 = y\]

Do Practice B #'s 8, 12
2-1.4 - Application

The distance in miles from the airport that a plane should begin descending, divided by 3, equals the plane's height above the ground in thousands of feet. If a plane is 10,000 feet above the ground, write and solve an equation to find the distance at which the plane should begin descending.

\[ \frac{d}{3} = h \]

\[ \frac{d}{3} = 10 \]

\[ (3) \frac{d}{3} = 10(3) \]

\[ d = 30 \text{ miles from the airport} \]

Do Practice B #s 13, 14, 15