Tutorial Set 22 – Some American History

1. Who said, “Go West Young Man, Go West” and why did he recommend this?

2. Who said, “Forty-four forty or fight”? What was the occasion?

3. There is an NFL football team with the name “The San Francisco Forty Niners”. Who were the earlier Forty Niners?

4. What was the Missouri Compromise?

Tutorial Set 23 – Dividing Fractions

We want to soon start solving problems with unknowns. Such problems will often involve fractions. It is important that you know how to add, subtract, multiple and divide fractions. Previous exercises have to some degree covered all except dividing factions so we will now take a look at dividing fractions. We will see that such problems will be converted to multiplying fractions. It will be explained in several different ways.

Consider the following: (n1/n2)/ (n3/n4). The reciprocal of a number is simply when the numerator and denominator are interchanged. Then, the reciprocal of n3/n4 is n4/n3. The way to change the problem of dividing fractions into multiply fractions can be illustrated by multiply the top and bottom by the reciprocal of the denominator, in our case, by n4/n3.

This is done as follows: (n1/n2)/ (n3/n4) = [(n4/n3) (n1/n2)]/ (n4/n3) (n3/n4)]

At the bottom, we see that (n4/n3) (n3/n4) = [(n3) (n4)]/ [(n3) (n4)] = 1

We are then just left with [(n4/n3) (n1/n2)]/1 = [(n4/n3) (n1/n2)]

The rule for dividing fractions can be expressed in the following different ways:

1. Multiply the numerator by the reciprocal of the denominator.
2. Invert the divisor and multiply.
3. Flip the divisor and multiply (noting that the denominator is the divisor).

Example 1. (2/3)/(3/4) = (2/3) x (4/3) = 12/9

Example 2. (6/8)/(1/2) = (6/8) x (2/1) = 12/8

Now you try it. Work the following problems.

1. (4/5)/(2/3)
2. (7/4)/(3/2)
3. (9/5)/(4/2)
4. (10/4)/(1/2)
5. (6/7)/(2/5)

Tutorial Set 24 – Solving Simple Equations Dividing Fractions

We said we would have problems with unknowns where understanding how to divide fractions would be necessary. Some simple problems would be given here.

We said that the rule for dividing fractions can be expressed in the following different ways:

1. Multiply the numerator by the reciprocal of the denominator.
2. Invert the divisor and multiply.
3. Flip the divisor and multiply (noting that the denominator is the divisor).

We will give two examples where you are to find y, as follows:

Example 1. Given y/(1/2) = 20; Solution: Diving both sides of the equation by 1/2 gives y = 20/(1/2) = 20x(2/1) = 40

Example 2. Given y/(2/3) = 4/5; Solution: Diving both sides of the equation by 2/3 gives y = (4/5)/(2/3) = (4/5)x(3/2) = 12/10

Now you try it. Work the following problems to solve for y.

1. y/(4/5) = 10
2. y/(7/4) = 5/6
3. y/(9/5) = 6
4. y/(10/4) = 2/5
5. y/(6/7) = 3/8

Tutorial Set 25 – Solving Distance, Time and Speed Problems

You have already been introduced to this, but we will mix in some fractions.

The relationship is distance = (speed) x time.

Let D = distance, S = speed and T = time, then we have

D = (S)x(T)

But given any two of these, we can solve for the other unknown. The other two forms are:

S= D/T and

T = D/S

Do the following:

1. Find D given S = 60 and T = 2/3
2. Find S given D = 10 and T = 2/4
3. Find T given D = 75 and S = 3/5
4. Find S given D = (20/3) and T = (3/4)
5. Find the speed needed to travel 60 miles in 4/5 of an hour.

Tutorial Set 26 – Water Temperature

1. At what temperature does water freeze on the Fahrenheit scale?
2. At what temperature does water freeze on the centigrade scale?
3. At what temperature does water boil on the Fahrenheit scale?
4. At what temperature does water boil on the centigrade scale?
5. What is placed in the radiator of an automobile to mix with the water to control the temperature? How does it work?