means ÷ by 3

Feb 2

One-third of the team's supply of hockey pucks were taken from the locker room to the bench. During the game, 5 pucks were caught by fans. At the end of the game, there were 7 pucks left at the bench. What was the team's original supply of pucks?

Let x represent team's original supply of pucks.

a) Write an equation you can use to solve the problem

b) Solve the equation

$$\frac{x}{3} - 5 = 7$$

c) Verify the solution

$$\frac{x}{3} - 5 + 5 = 7 + 5$$

$$\frac{x}{3} = 12$$

$$3 \cdot \frac{x}{3} = 12 \cdot 3$$

$$\boxed{x = 36}$$

The team had 36 puck originally.

Verify

LHS   RHS

$\frac{x}{3} - 5$ 7

Sub in $x = 36$

$\frac{36}{3} - 5$

$12 - 5$ same

7 ✓

pg 336
#1, 2 - Discuss

3a) $\dfrac{t}{5} = 6$

$\dfrac{t}{5} \times 5 = 6 \times 5$

$t = 30$

LS
$\dfrac{t}{5}$
$\dfrac{30}{5}$
6

RS
6

b) $\dfrac{a}{7} = 8$

$\dfrac{a}{7} \times 7 = 8 \times 7$

$a = 56$

LS
$\dfrac{a}{7}$
$\dfrac{56}{7}$
8

RS
8

c) $\dfrac{b}{6} = 3$

$\dfrac{b}{6} \times 6 = 3 \times 6$

$b = 18$

LS
$\dfrac{b}{6}$
$\dfrac{18}{6}$
3

RS
3

d) $\dfrac{c}{3} = 9$

$\dfrac{c}{3} \times 3 = 9 \times 3$

$c = 27$

LS
$\dfrac{c}{3}$
$\dfrac{27}{3}$
9

RS
9

4 a) $\dfrac{d}{-4} = 5$

$\dfrac{d}{-4} \times -4 = 5 \times -4$

$\qquad d = -20$

$\qquad \overset{LS}{\dfrac{d}{-4}} \quad \dfrac{-20}{-4}$

$\qquad\qquad 5$

$\qquad\qquad \overset{RS}{5}$

b) $\dfrac{f}{8} = -5$

$\dfrac{f}{8} \times 8 = -5 \times 8$

$\qquad f = -40$

$\qquad \overset{LS}{\dfrac{f}{8}} = \dfrac{-40}{8}$

$\qquad\qquad = -5$

$\qquad\qquad \overset{RS}{-5}$

c) $\dfrac{k}{9} = -4$

$\dfrac{k}{9} \times 9 = -4 \times 9$

$\qquad k = -36$

$\qquad \overset{LS}{\dfrac{k}{9}} = \dfrac{-36}{9}$

$\qquad\qquad = -4$

$\qquad\qquad \overset{RS}{-4}$

d) $\dfrac{m}{-5} = -7$

$\dfrac{m}{-5} \times -5 = -7 \times -5$

$\qquad m = 35$

$\qquad \overset{LS}{\dfrac{m}{-5}} = \dfrac{35}{-5}$

$\qquad\qquad = -7$

$\qquad\qquad \overset{RS}{-7}$

5 b = # golf balls in bag

$$\frac{b}{4} = 8$$

$$\frac{b}{4} \times 4 = 8 \times 4$$

$$b = 32$$

There are 32
golf balls in the bag.

6. n = the number

a) $\frac{n}{6} = 9$

$$\frac{n}{6} \times 6 = 9 \times 6$$

$$n = 54$$

LS
$\frac{n}{6} = \frac{54}{6}$
$= 9$

RS
9

b) $\frac{n}{-4} = -3$

$$\frac{n}{-4} \times -4 = -3 \times -4$$

$$n = +12$$

LS
$\frac{n}{-4} = \frac{12}{-4}$
$= -3$

RS
-3

c) $\frac{n}{-5} = 7$

$$\frac{n}{-5} \times -5 = 7 \times -5$$

$$n = -35$$

LS
$\frac{n}{-5} = \frac{-35}{-5}$
$= 7$

RS
7

7. a) $\dfrac{n}{4} + 3 = 10$

$\dfrac{n}{4} + 3 - 3 = 10 - 3$

$\dfrac{n}{4} = 7$

$\dfrac{n}{4} \times 4 = 7 \times 4$

$n = 28$

LS
$\dfrac{n}{4} + 3$

$\dfrac{28}{4} + 3$

$7 + 3$

10

RS
10

b) $\dfrac{m}{3} - 2 = 9$

$\dfrac{m}{3} - 2 + 2 = 9 + 2$

$\dfrac{m}{3} = 11$

$\dfrac{m}{3} \times 3 = 11 \times 3$

$m = 33$

LS
$\dfrac{m}{3} - 2$

$\dfrac{33}{3} - 2$

$11 - 2$

9

RS
9

c) $13 + \dfrac{x}{2} = 25$

$13 + \dfrac{x}{2} - 13 = 25 - 13$

$\dfrac{x}{2} = 12$

$\dfrac{x}{2} \times 2 = 12 \times 2$

$x = 24$

LS
$13 + \dfrac{x}{2}$

$13 + \dfrac{24}{2}$

$13 + 12$

25

RS
25

d) $-9 + \dfrac{s}{2} = 2$

$-9 + \dfrac{s}{2} + 9 = 2 + 9$

$\dfrac{s}{2} = 11$

$\dfrac{s}{2} \times 2 = 11 \times 2$

$s = 22$

LS
$-9 + \dfrac{s}{2}$

$-9 + \dfrac{22}{2}$

$-9 + 11$

2

RS
2

Write an equation for the following
and solve

a) one-forth of the elementary school went
on a trip with 3 chaperones. There was 90
people on the trip. How many elementary
students are there in all?

Let x represent # of elementary students
are in total

$$\frac{x}{4} + 3 = 90$$

$$\frac{x}{4} + 3 - 3 = 90 - 3$$

$$\frac{x}{4} = 87$$

$$4 \cdot \frac{x}{4} = 87 \cdot 4$$

$$\boxed{x = 348}$$

There are 348 elementary students.

b) A number divided by 5 is subtracted from
8 is 14   Start   Let x represent a number

$$8 - \frac{x}{5} = 14$$

$$\cancel{8}^{-8} - \frac{x}{5} = 14 - 8$$

$$\frac{-x}{5} = 6$$

$$5 \cdot \frac{-x}{5} = 6 \cdot 5$$

$$-x = 30$$
$$\div(-1) \qquad \div(-1)$$

$$\boxed{x = -30}$$

The number is 30.

<u>Denominator as Variable</u>

What if we have a fraction with the variable as the denominator?

$\dfrac{20}{x} + 7 = 12$

Step1: Get rid of add or subtract first by doing the opposite

$\dfrac{20}{x} + 7 - 7 = 12 - 7$

$\dfrac{20}{x} = 5$

Step 2: Bring the variable to the top by multiplying each side by that variable.

$x \cdot \dfrac{20}{x} = 5 \cdot x$

$20 = 5x$

$\dfrac{20}{5} = \dfrac{5x}{5}$

Step 3: Get the variable alone by dividing each side by the number in front to x.

$4 = x$

Class/Homework

Quiz Tomorrow

Test _____

pg. 336
    # 8, #9, #12, #13ab

&

→ Need more #11

Read Page 338-341

Sheet Extra Practice 3
    # 1, #2 ,#3, #4 ,#5, #6

8. Solve each equation.
Verify the solution.
a) $\frac{p}{-3} + 9 = 3$ b) $\frac{t}{-6} + 12 = 18$
c) $-24 + \frac{w}{5} = -29$ d) $-17 + \frac{e}{-7} = -8$

9. For each sentence, write an equation.
Solve the equation to find the number.
a) Add 1 to a number divided by -3
and the sum is 6.
b) Subtract a number divided by 9
from 3 and the difference is 0.
c) Add 4 to a number divided by -2
and the sum is -3.

10. One-half of the team's supply of baseballs
was taken from the dressing room to the
dugout. During the game, 11 baseballs
were caught by fans. At the end of the
game, there were 12 baseballs left in the
dugout. What was the team's original
supply of baseballs?

a) Write an equation you can use to
solve the problem.
b) Solve the equation.
c) Verify the solution.

11. Assessment Focus Five students in
Mrs. Lamert's tutorial class after school
are solving equations. She brought a bag
of treats. Mrs. Lamert explained that if
the 5 students shared the bag of treats
equally, then gave one treat each to the
teacher, each student would still have
9 treats. How many treats were in the
bag? Here is the equation Jerry
suggested: $\frac{n}{5} - 1 = 9$
a) Is Jerry's equation correct?
Explain why or why not.
b) If your answer to part a is yes, solve
the equation using algebra.
If your answer to part a is no,
correct the equation, then solve
the equation using algebra.
c) Verify the solution.

12. One-third of the Grade 8 students went
to the track-and-field meet. Five track
coaches went too. There were 41 people
on the bus, not including the driver.
How many students are in Grade 8?
a) Write an equation you can use to
solve the problem.

13. Check each student's work below. Rewrite a correct and complete algebraic solution where necessary

a) Student A:

$$\frac{h}{-9} = 4$$

$$\frac{h}{-9} \times (-9) = 4 \times (-9)$$

$$\frac{-9h}{-9} = -36$$

$$h = -36$$

b) Student B:

$$\frac{t}{8} - 2 = 4$$

$$8 \times \frac{t}{8} - 2 = 4 \times 8$$

$$\frac{8t}{8} - 2 = 32$$

$$t - 2 = 32$$

$$t - 2 + 2 = 32 + 2$$

$$t = 34$$

c) Student C:

$$\frac{r}{-4} + 3 = 13$$

$$\frac{r}{-4} + 3 - 3 = 13 - 3$$

$$\frac{r}{-4} = 10$$

$$4 \times \frac{r}{-4} = 10 \times 4$$

$$r = 40$$

14. Take It Further Jonah used the equation $3 + \frac{n}{7} = 18$ to solve a word problem.

a) What might the word problem be?

b) Solve the problem.

c) Verify the solution.