Warm Up Grade 8

Jack and Diane went to the movies.
They each paid the same amount for an admission ticket.
Together, they spent $12 on snacks.
The total cost of admission and snacks for Jack and Diane was $26.
How much was each admission ticket?

a) Choose a variable.
Write an equation you could use to solve this problem.

let "t" ≡ cost of admission ticket.

b) Use a model to solve the equation.

c) Verify the solution.

$$2t + 12 = 26$$

$$2t + 12 - 12 = 26 - 12$$

$$2t = 14$$

$$\div 2 \quad \div 2$$

$$\boxed{t = 7}$$

The admission was $7.

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1. When the numbers are larger it is easier to use algebra rather than tiles or scales

2 It is easier to verify using algebra when the answer is a fraction or a decimal.

3. You have to keep the balance and do the same thing on both sides.

4. Student's choice
(Most would chose a decimal, and use a calculator).

5a) $2x-1=7$

$2x-1+1=7+1$

$2x=8$

$\frac{2x}{2}=\frac{8}{2}$

$x=4$

LS

$2x-1$

$2\times4-1$

$8-1$

7

RS

7

b) $11=4a-1$

$11+1=4a-1+1$

$12=4a$

$\frac{12}{4}=\frac{4a}{4}$

$3=a$

LS

11

RS

$4a-1$

$4\times3-1$

$12-1$

11

c) $5+2m=9$

$5+2m-5=9-5$

$2m=4$

$\frac{2m}{2}=\frac{4}{2}$

$m=2$

LS

$5+2m$

$5+2\times2$

$5+4$

9

RS

9

d) $1 = 10 - 3x$

$1 - 10 = 10 - 3x - 10$

$-9 = -3x$

$\frac{-9}{-3} = \frac{-3x}{-3}$

$3 = x$

$\frac{-9}{3} = \frac{-3x}{3}$

$-3 = -x$

$3 = x$

LS: 1

RS: $10 - 3x$, $10 - 3 \times 3$, $10 - 9$, 1

e) $13 - 2x = 5$

$13 - 2x - 13 = 5 - 13$

$-2x = -8$

$\frac{-2x}{-2} = \frac{-8}{-2}$

$x = 4$

LS: $13 - 2x$, $13 - 2 \times 4$, $13 - 8$, 5

RS: 5

f) $3x - 6 = 12$

$3x - 6 + 6 = 12 + 6$

$3x = 18$

$\frac{3x}{3} = \frac{18}{3}$

$x = 6$

LS: $3x - 6$, $3 \times 6 - 6$, $18 - 6$, 12

RS: 12

6a) $4x = -16$

$\frac{4x}{4} = \frac{-16}{4}$

$x = -4$

LS: $4x$, $4x - 4$, $+16$

RS: -16

b) $12 = -3x$

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

$-4 = x$

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

$4 = -x$

$-4 = x$

LS: 12

RS: $-3x$, $-3x - 4$, $+12$

c) $-21 = 7x$

$\frac{-21}{7} = \frac{7x}{7}$

$-3 = x$

LS: -21

RS: $7x$, $7x - 3$, -21

d) $6x = -30$

$\frac{6x}{6} = \frac{-30}{6}$

$x = -5$

LS: $6x$, $6x - 5$, -30

RS: -30

7. a) mistake
In 2nd step, the student added and subtracted 15 from the right side.

$$-3x+15=30$$
$$-3x+15-15=30-15$$
$$-3x=15$$
$$\frac{-3x}{3}=\frac{15}{3}$$
$$-x=5$$
$$x=-5$$

b) mistake, student said $7-1=8$ instead of 6

$$7=1+2n$$
$$7-1=1+2n-1$$
$$6=2n$$
$$\frac{6}{2}=\frac{2n}{2}$$
$$3=n$$

c) mistake - in 3rd step, the student should have divided by 2, and he mult. by 2

$$3+2t=4$$
$$3+2t-3=4-3$$
$$2t=1$$
$$\frac{2t}{2}=\frac{1}{2}$$
$$t=\frac{1}{2}$$

d) No mistake

8a) $2x+5=-7$

$2x+5-5=-7-5$

$2x=-12$

$\frac{2x}{2}=\frac{-12}{2}$

$x=-6$

LS	RS
$2x+5$	-7
$2x-6+5$	
$-12+5$	
-7	

b) $-3x+11=2$

$-3x+11-11=2-11$

$-3x=-9$

$\frac{-3x}{-3}=\frac{-9}{-3}$

$x=3$

LS	RS
$-3x+11$	2
$-3\times3+11$	
$-9+11$	
2	

c) $-9 = 5 + 7x$

$-9 - 5 = 5 + 7x - 5$

$-14 = 7x$

$\frac{-14}{7} = \frac{7x}{7}$

$-2 = x$

LS
-9

RS
$5 + 7x$
$5 + 7x - 2$
$5 + -14$
-9

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9. a) n = number of week

$24n + 72 = 288$

$24n + 72 - 72 = 288 - 72$

$24n = 216$

$\frac{24n}{24} = \frac{216}{24}$

$n = 9$

LS: $24n + 72$

$24 \times 9 + 72$

$216 + 72$

288

RS: 288

In 9 weeks, Navid will have the money in her account.

10.

a) n = number of students

$2n + 85 = 197$

$2n + 85 - 85 = 197 - 85$

$2n = 112$

$\frac{2n}{2} = \frac{112}{2}$

$n = 56$

LS: $2n + 85$

$2 \times 56 + 85$

$112 + 85$

197

RS: 197

56 students attended the dance.

Class/Homework

Page 332 #11 (use algebra) and always check (verify means sub back in)

Worksheet 2 : Solve using algebra and always check (verify, means sub back in)

#1-#6

Attachments

Extra Practice 2 Solve using algebra.pdf