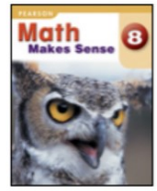
Warm Up Grade 8

Solutions



Distribute and solve

1) a) $6(x - 8) = 24$

$6x - 48 = 24$

$6x - 48 + 48 = 24 + 48$

$6x = 72$

$\frac{6x}{6} = \frac{72}{6}$

$x = 12$

b) $2(k + 3) = 16$

$2k + 6 = 16$

$2k + 6 - 6 = 16 - 6$

$2k = 10$

$\frac{2k}{2} = \frac{10}{2}$

$k = 5$

c) $-3(x - 7) = 9$

$-3x + 21 = 9$

$-3x + 21 - 21 = 9 - 21$

$-3x = -12$

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

$x = 4$

pg. 342 # 7-16, 18,19 Reflect

7a) $2(x+10)$
$2x+20$

b) $5(a+1)$
$5a+5$

c) $10(f+2)$
$10f+20$

d) $6(12+g)$
$72+7g$

e) $8(8+y)$
$64+8y$

f) $5(s+6$
$5s+30$

g) $3(9+p)$
$27+3p$

h) $4(11+r)$
$44+4r$

i) $7(g+15)$
$7g+105$

j) $9(7+h)$
$63+9h$

8 a) $3(x-7)$
$3x-21$

b) $4(a-3)$
$4a-12$

c) $9(h-5)$
$9h-45$

d) $7(8-f)$
$56-7f$

e) $5(1-5)$
$5-5s$

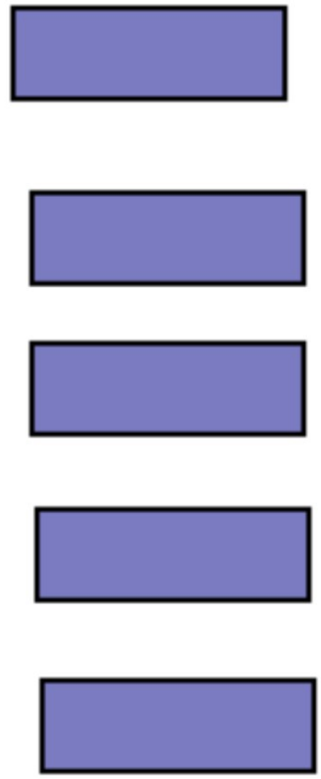
f) $6(p-2)$
$6p-12$

g) $8(11-t)$
$88-8t$

h) $2(15-v)$
$30-2v$

i) $10(b-8)$
$10b-80$

j) $11(c-4)$
$11c-44$



9. $Per = s+s+s+s$
$= b+h+b+h$
or $2b+2h$

or

$Per = 2(b+h)$
$= 2b+2h$

(Discuss)

10. $hb = bh$

When you multiply order does not matter

$2 \times 3 = 3 \times 2$

therefore

$h \times b = b \times h$

11. $9(6-t)$

$= 54 - 9t$

which is (a)

12. a) $-6(c+4)$

$-6c - 24$

b) $-8(a-5)$ $(-8)(-5)$

c) $10(f-7)$

$10f - 70$

d) $3(-8-g)$

e) $-8(8-y)$

$-64+8y$

$-64-(-8y)$

$-64+8y$

f) $-2(-5t+5)$

g) $-5(-t-8)$

$5t+40$

$5t \div (-40)$

h) $-9(9-w)$ $-81-(-9w)$

13. a) $2x+20$ and $2(x+20)$

not equivalent

$2(x+20)$

$= 2x+40$

They didn't multiply the 20 by 2.

b) $3x+7$ and $10x$

not equivalent

could model to show

$3x+7x$ equals $10x$, but you don't add the 3 and the 7 in $3x+7$ because they are unlike terms.

c) $6+2t$ and $2(t+3)$

equivalent

$2(t+3)$

$2t+6$ which is the same as $6+2t$ (add in any order).

d) $9+x$ and $x+9$

equivalent

you can add in any order.

14. $15 \times 25 + 15 \times 14$ OR $15(25+14)$

Jersey for each — Hat for each — (Jersey and hat together)

b) $375 + 210$
585

$15(39)$
585

$15(a)(b)$
$5 \times 9 + 5 \times 8$
$45 + 40$
85

OR $5(9+8)$
$5(17)$
85

16. Column 1 — Column 2

a) $6(t-6)$
$6t-36$ — (iv)

b) $-6(t-6)$
$-6t+36$ — (ii)

c) $-6(t+6)$
$-6t-36$ — (iii)

d) $6(6+t)$
$36+6t$ — (i)

18. a) $7(5+y-2)$

$7(3+y)$

$21+7y$

or $7(5+y-2)$

$35+7y-14$

$21+7y$

b) $-3(-t+8-3)$

$-3(-t+5)$

$3t-15$

c) $-8(-9+s+5)$

$-8(-4+s)$

$32+(-8s)$

$32-8s$

d) $12(-10-p+7)$

$12(-3-p)$

$-36-12p$

19 a) $2(7+b+c)$

$14+2b+2c$

b) $11(-6+e-f)$

$-66+11e-11f$

c) $-1(-r+s-8)$

$r-s+8$

d) $-10(-6-v-w)$

$60+10v+10w$

e) $5(j-15-k)$

$5j-75-5k$

f) $-4(-g+12-h)$

$4g-48+4h$

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4a) $3(x+5)=36$

$3x+15=36$

$3x+15-15=36-15$

$3x=21$

$\frac{3x}{3}=\frac{21}{3}$

$x=7$

LS
$3(x+5)$
$3(7+5)$
3×12
36

RS
36

b) $4(p-6)=36$

$4p-24=36$

$4p-24+24=36+24$

$4p=60$

$\frac{4p}{4}=\frac{60}{4}$

$p=15$

LS
$4(p-6)$
$4(15-6)$
4×9
36

RS
36

c) $5(y+2)=25$

$5y+10=25$

$5y+10-10=25-10$

$5y=15$

$\frac{5y}{5}=\frac{15}{5}$

$y=3$

LS
$5(y+2)$
$5(3+2)$
5×5
25

RS
25

d) $10(a+8)=30$

$10a+80=30$

$10a+80-80=30-80$

$10a=-50$

$\frac{10a}{10}=\frac{-50}{10}$

$a=-5$

LS
$10(a+8)$
$10(-5+8)$
10×3
30

RS
30

Sa) $-2(a+4)=18$

$-2a-8=18$

$-2a-8+8=18+8$

$-2a=26$

$\frac{-2a}{-2}=\frac{26}{-2}$

$a=-13$

$-2a+(-8)$

LS

$-2(a+4)$

$-2(-13+4)$

-2×-9

18

RS

18

b) $-3(r-5)=-27$

$-3r+15=-27$

$-3r+15-15=-27-15$

$-3r=-42$

$\frac{-3r}{-3}=\frac{-42}{-3}$

$r=+14$

LS

$-3(r-5)$

$-3(14-5)$

-3×9

-27

RS

-27

c) $7(-y+2)=28$

$-7y+14=28$

$-7y+14-14=28-14$

$-7y=14$

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

$y=-2$

$-y$

$-1(-2)$

LS

$7(-y+2)$

$7(-1(-2)+2)$

$7(2+2)$

7×4

28

RJ

28

d) $-6(c-9)=-42$

$-6c-(+54)=-42$

$-6c-(+54)+(+54)=-42+54$

$-6c=-96$

$\frac{-6c}{-6}=\frac{-96}{-6}$

$c=16$

$-6c+54=-42$

$-6c+54-54=-42-54$

$-6c=-96$

LS

$-6(c-9)$

$-6(16-9)$

-6×7

-42

RJ

-42

6 c = cards started with

$$2(c+3) = 20$$
$$2c + 6 = 20$$
$$2c + 6 - 6 = 20 - 6$$
$$2c = 14$$
$$\frac{2c}{2} = \frac{14}{2}$$
$$c = 7$$

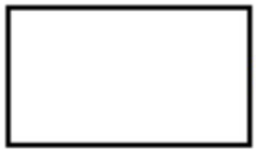
He started with 7 cards.

LS
$2(c+3)$
$2(7+3)$
2×10
20

RS
20

7. Discuss.

8.



$P = s+s+s+s$

$26 = 8+w+8+w$

$26 = 16+2w$

$26-16 = 16+2w-16$

$10 = 2w$

$\frac{10}{2} = \frac{2w}{2}$

$5 = w$

The width is 5 cm

LS	RS
26	$16+2w$
	$16+2\times5$
	$16+10$
	26

9 n = price before reduced

$n-5$ = reduced price

$6(n-5) = 90$

$6n-30 = 90$

$6n-30+30 = 90+30$

$6n = 120$

$\frac{6n}{6} = \frac{120}{6}$

$n = 20$

LS	RS

The regular price of the t-shirts was $20.

$$4x - 3 = -2x - 9$$

$$4x^{+2x} - 3 = -2x^{+2x} - 9$$

$$6x - 3 = -9$$

$$6x - 3^{+3} = 9 + 3$$

$$6x = 12$$

$$\frac{6x}{6} = \frac{12}{6}$$

$$\boxed{x = 2}$$

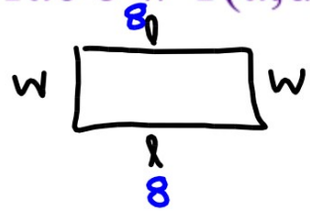
Class/Homework

$8(t-6) = 264$

pg. 347 # 7, #8, #9, #10, #12, #13, #14

Sheet Extra Prac 5 # 1(a,d), #2(a,d), #3, #5

$P = 26$



$2(l+w) = 26$

$2(8+w) = 26$

$16 + 2w = 26$

Part 1 Test on _____

$6(t-5)$

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7. A student wrote this equation to solve the problem in question 6:
$2n + 3 = 20$
How would you explain to the student why this is incorrect?

Apply

8. The perimeter of a rectangle is 26 cm. The rectangle has length 8 cm. What is the width of the rectangle?
- **a)** Write an equation that can be solved using the distributive property.
- **b)** Solve the equation.
- **c)** Verify the solution.

9. **Assessment Focus** The price of a souvenir T-shirt was reduced by $5. Jason bought 6 T-shirts for his friends. The total cost of the T-shirts, before taxes, was $90. What was the price of a T-shirt before it was reduced?
- **a)** Write an equation to model this problem.
- **b)** Solve the equation.
- **c)** Verify the solution. Explain how you know it is correct.

10. Chuck and 7 friends went to Red Deer's Westerner Days fair. The cost of admission was $6 per person. They each bought an unlimited midway ride ticket. The total cost of admission and rides for Chuck and his friends was $264. What was the price of an unlimited midway ride ticket?

- **a)** Write an equation to model this problem.
- **b)** Solve the equation. Verify the solution.

11. Inge chose an integer. She added 9, then multiplied the sum by −5. The product was 15. Which integer did Inge choose?

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

b) Solve the equation.

c) Verify the solution.

12. Mario chose an integer. He subtracted 7, then multiplied the difference by –4. The product was 36. Which integer did Mario choose?

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

b) Solve the equation.

c) Verify the solution.

13. Kirsten used the distributive property to solve this equation: $8(-x + 3) = 8$

a) Check Kirsten's work. Is her solution correct?

$$8(-x + 3) = 8$$
$$8(-x) + 8(3) = 8$$
$$-8x + 24 = 8$$
$$-8x + 24 - 24 = 8 - 24$$
$$\frac{-8x}{-8} = \frac{-16}{8}$$
$$x = -2$$

b) If your answer is yes, verify the solution. If your answer is no, describe the error, then correct it.

14. Solve each equation using the distributive property. Verify the solution.

a) $-10 = 5(t - 2)$ **b)** $7 = 2(p - 3)$

c) $4(r + 5) = 23$ **d)** $-3(s + 6) = 18$

15. **Take It Further**

Amanda's office has 40 employees. The employees want to have a catered dinner. They have found a company that will provide what they need for $25 per person. Amanda knows that some people will bring a guest. The company has budgeted $1500 for this event. How many guests can they invite? Assume the price of $25 includes all taxes.

a) Write an equation for this problem.

b) Solve the equation.

c) Verify the solution.

16. **Take It Further**

Glenn used the equation $7(n - 2) = 42$ to solve a word problem.

a) Create a word problem that can be solved using this equation.

b) Solve the problem.

Verify the solution.

17. **Take It Further**

Solve each equation using the distributive property. Verify the solution.

a) $7(2 + p - 5) = 14$

b) $8(x - 9 + 7) = -13$

c) $-2(10 - s + 1) = -21$