

Math 20 Chapter 4 Review

#1,  $3x - 12$ ,  $x = 2$   
 $= 3(2) - 12$   
 $= 6 - 12$   
 $= -6$  (b)

#2.  $-5x + 1$ ,  $x = 3$   
 $= -5(3) + 1$   
 $= -15 + 1$   
 $= -14$  (c)

#3,  $4x - 7$ ,  $x = -1$   
 $= 4(-1) - 7$   
 $= -4 - 7$   
 $= -11$  (d)

#4,  $x^2 - 3x + 2$ ,  $x = 0$   
 $= (0)^2 - 3(0) + 2$   
 $= 0 - 0 + 2$   
 $= 2$  (e)

#5,  $3x^2 - 2x + 7$ ,  $x = -2$   
 $= 3(-2)^2 - 2(-2) + 7$   
 $= 3 \cdot 4 + 4 + 7$   
 $= 12 + 4 + 7$   
 $= 16 + 7$   
 $= 23$  (m)

|                     |
|---------------------|
| SDUK                |
| $(-2)^2 = (-2)(-2)$ |
| $= 4$               |

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$$\#6. \quad 4x - 3 = -7, \quad x = -1$$

$$4(-1) - 3 = -7$$

$$-4 - 3 = -7$$

$$-7 = -7$$

TRUE!

ANS:  $-1$  is a solution. (a)

$$\#7. \quad 2x - 1 = 3x + 1, \quad x = 5$$

$$2(5) - 1 = 3(5) + 1$$

$$10 - 1 = 15 + 1$$

$$9 = 16$$

False!

ANS:  $5$  is not a solution. (d)

$$\#8. \quad 5x - 2 = -17, \quad x = -3$$

$$5(-3) - 2 = -17$$

$$-15 - 2 = -17$$

$$-17 = -17$$

TRUE!

ANS:  $-3$  is a solution. (a)

$$\#9. \quad x + 5 = -8$$

$$-5 + x + 5 = -5 + (-8)$$

$$x = -13$$

check

$$(-13) + 5 = -8$$

$$-8 = -8$$

TRUE!

ANS: The solution is  $-13$ . (K)

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#10.  $x - 2 = 14$   
 $2 + x - 2 = 2 + 14$   
 $x = 16$

check  
 $(16) - 2 = 14$   
 $14 = 14$   
 TRUE!

ANS: The solution is 16. (D)

#11.  $\frac{2}{3}x = 18$   
 $\frac{3}{2} \cdot \frac{2}{3}x = \frac{3}{2} \cdot \frac{18}{1}$   
 $x = \frac{3 \cdot 3 \cdot 2}{2 \cdot 1}$   
 $x = 3 \cdot 3$   
 $x = 27$

check  
 $\frac{2}{3} \cdot \left(\frac{27}{1}\right) = 18$   
 $\frac{2 \cdot 3 \cdot 3}{3 \cdot 1} = 2 \cdot 3 \cdot 3$   
 $2 \cdot 3 \cdot 3 = 2 \cdot 3 \cdot 3$   
 $18 = 18$   
 TRUE!

SDNK  
 $\begin{array}{r} 18 \quad 27 \\ \uparrow \quad \uparrow \\ 9 \quad 2 \quad 1 \\ \uparrow \quad \uparrow \\ 3 \quad 3 \quad 3 \quad 9 \\ \uparrow \quad \uparrow \\ 3 \quad 3 \end{array}$

ANS: The solution is 27. (F)

#12.  $4x + 1 = 1$   
 $-1 + 4x + 1 = -1 + 1$   
 $4x = 0$   
 $\frac{1}{4} \cdot 4x = \frac{1}{4} \cdot 0$   
 $x = 0$

check  
 $4(0) + 1 = 1$   
 $1 = 1$   
 TRUE!

ANS: The solution is 0. (E)

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#13.  $3x - 7 = 5x + 7$   
 $-3x + 3x - 7 = -3x + 5x + 7$   
 $-7 = 2x + 7$   
 $-7 + (-7) = -7 + 2x + 7$   
 $-14 = 2x$   
 $\frac{1}{2} \cdot \left(\frac{-14}{1}\right) = \frac{1}{2} \cdot \left(\frac{2x}{1}\right)$   
 $-\frac{2 \cdot 7}{2} = x$   
 $-7 = x$

check  
 $3(-7) - 7 = 5(-7) + 7$   
 $-21 - 7 = -35 + 7$   
 $-28 = -28$   
 TRUE!

ANS: The solution is -7. (u)

#14.  $2(x - 5) = -30$   
 $2 \cdot x - 2 \cdot 5 = -30$   
 $10 + 2x - 10 = -30 + 10$   
 $2x = -20$   
 $\frac{1}{2} \cdot \frac{2x}{1} = \frac{1}{2} \cdot \left(\frac{-20}{1}\right)$   
 $x = \frac{-2 \cdot 2 \cdot 5}{2}$   
 $x = -2 \cdot 5$   
 $x = -10$

check  
 $2[(-10) - 5] = -30$   
 $2[-15] = -30$   
 $-30 = -30$   
 TRUE!

SDwk  
 20  
 ^  
 2 10  
 ^  
 25

ANS: The solution is -10. (w)

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$$\begin{aligned} \#15. \quad & 3(2x+3) = -3(x-5) \\ & 3 \cdot 2x + 3 \cdot 3 = -3 \cdot x + (-3)(-5) \\ & 6x + 9 = -3x + 15 \\ & 3x + 6x + 9 = -3x + 15 + 3x \\ & 9x + 9 = 15 \\ & -9 + 9x + 9 = -9 + 15 \\ & 9x = 6 \\ & \frac{1}{9} \cdot \frac{9x}{1} = \frac{1}{9} \cdot \frac{6}{1} \\ & x = \frac{2 \cdot 3}{3 \cdot 3} \\ & x = \frac{2}{3} \end{aligned}$$

ANS: The solution is  $\frac{2}{3}$ .

check

$$\begin{aligned} & 3 \left[ 2 \left( \frac{2}{3} \right) + 3 \right] = -3 \left[ \left( \frac{2}{3} \right) - 5 \right] \\ & 3 \left[ \frac{4}{3} + 3 \right] = \frac{-3}{1} \cdot \frac{2}{3} + (-3)(-5) \\ & \frac{3 \cdot 4}{1 \cdot 3} + 3 \cdot 3 = -2 + 15 \\ & 4 + 9 = 13 \\ & 13 = 13 \\ & \text{TRUE!} \end{aligned}$$

Ⓐ

$$\begin{aligned} \#16. \quad & 6(3x-2) - 8 = 4x-6 \\ & 6 \cdot 3x - 6 \cdot 2 - 8 = 4x-6 \\ & 18x - 12 - 8 = 4x-6 \\ & 18x - 20 = 4x-6 \\ & -4x + 18x - 20 = -4x + 4x - 6 \\ & 14x - 20 = -6 \\ & 20 + 14x - 20 = -6 + 20 \\ & 14x = 14 \\ & \frac{1}{14} \cdot \frac{14x}{1} = \frac{1}{14} \cdot \frac{14}{1} \\ & x = 1 \end{aligned}$$

ANS: The solution is 1.

check

$$\begin{aligned} & 6[3(1)-2]-8 = 4(1)-6 \\ & 6[3-2]-8 = 4-6 \\ & 6(1)-8 = -2 \\ & 6-8 = -2 \\ & -2 = -2 \\ & \text{TRUE!} \end{aligned}$$

Ⓑ

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#17,  $4x + 8 = 2x - 10$

$$-2x + 4x + 8 = -2x + 2x - 10$$

$$2x + 8 = -10$$

$$-8 + 2x + 8 = -8 + (-10)$$

$$2x = -18$$

$$\frac{1}{2} \cdot 2x = \frac{1}{2} \cdot \left(\frac{-18}{1}\right)$$

$$x = \frac{-2 \cdot 3 \cdot 3}{2}$$

$$x = -3 \cdot 3$$

$$x = -9$$

check

$$4(9) + 8 = 2(9) - 10$$

$$-36 + 8 = -18 - 10$$

$$-28 = -28$$

TRUE!

SDWK

$$\frac{18}{\wedge} \frac{9}{2}$$

$$\frac{3}{3}$$

ANS: The solution is 9,

(D)

#18,  $5x + \frac{3}{8} = -\frac{1}{4}$  LCD=8

$$\frac{8}{1} \left[ \frac{5x}{1} + \frac{3}{8} \right] = \frac{8}{1} \cdot \left( -\frac{1}{4} \right)$$

$$\frac{8}{1} \cdot \frac{5x}{1} + \frac{8}{1} \cdot \frac{3}{8} = \frac{-2 \cdot 2 \cdot 2}{2 \cdot 2}$$

$$40x + 3 = -2$$

$$-3 + 40x + 3 = -3 + (-2)$$

$$40x = -5$$

$$\frac{1}{40} \cdot \frac{40x}{1} = \frac{1}{40} \cdot \left( \frac{-5}{1} \right)$$

$$x = \frac{-5}{5 \cdot 2 \cdot 2}$$

$$x = \frac{-1}{2 \cdot 2}$$

$$x = -\frac{1}{8}$$

check

$$\frac{5}{1} \left( -\frac{1}{8} \right) + \frac{3}{8} = -\frac{1}{4}$$

$$-\frac{5}{8} + \frac{3}{8} = -\frac{1}{4}$$

$$\frac{-2}{8} = -\frac{1}{4}$$

$$\frac{-1 \cdot 2}{2 \cdot 2} = -\frac{1}{4}$$

$$\frac{-1}{2 \cdot 2} = -\frac{1}{4}$$

$$-\frac{1}{4} = -\frac{1}{4}$$

TRUE!

SDWK

$$LCD = 2 \cdot 2 \cdot 2 = 8$$

$$8 = 2 \cdot 2 \cdot 2$$

$$4 = 2 \cdot 2$$

ANS: The solution is  $-\frac{1}{8}$ ,

(F)

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|   |   |
|---|---|
| <p>#19, <math>\frac{7}{x} - \frac{2}{5} = 1</math> LCD = <math>5x</math></p> $\frac{5x}{1} \left[ \frac{7}{x} - \frac{2}{5} \right] = \frac{5x \cdot 1}{1 \cdot 1}$ $\frac{5x \cdot 7}{1 \cdot x} - \frac{5x \cdot 2}{1 \cdot 5} = 5x$ $35 - 2x = 5x$ $2x + 35 - 2x = 2x + 5x$ $35 = 7x$ $\frac{1}{7} \cdot \left( \frac{35}{1} \right) = \frac{1}{7} \cdot \frac{7x}{1}$ $\frac{5 \cdot 7}{7} = x$ $5 = x$ | <p>check</p> $\frac{7}{(5)} - \frac{2}{5} = 1$ $\frac{7-2}{5} = 1$ $\frac{5}{5} = 1$ $1 = 1$ <p>TRUE!</p> |
|---|---|

ANS: The solution is 5.

①

|   |   |  |
|---|---|--|
| <p>#20, <math>\frac{x}{6} + \frac{x}{2} = 8</math> LCD = 6</p> $\frac{6}{1} \left[ \frac{x}{6} + \frac{x}{2} \right] = 6 \cdot 8$ $\frac{6 \cdot x}{1 \cdot 6} + \frac{6 \cdot x}{1 \cdot 2} = 48$ $x + 3x = 48$ $4x = 48$ $\frac{1}{4} \cdot \frac{4x}{1} = \frac{1}{4} \cdot \frac{48}{1}$ $x = \frac{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3}{2 \cdot 2}$ $x = 2 \cdot 2 \cdot 3$ $x = 12$ | <p>check</p> $\frac{(12)}{6} + \frac{(12)}{2} = 8$ $2 + 6 = 8$ $8 = 8$ <p>TRUE!</p> | <p>SDWK</p> $48$ $\begin{array}{r} \wedge \\ 6 \ 8 \\ \wedge \ \wedge \\ 2 \ 3 \ 2 \ 4 \\ \wedge \\ 2 \ 2 \end{array}$ |
|---|---|--|

ANS: The solution is 12,

②

$$\#21, \quad 3x + \frac{1}{2} = \frac{3}{4} \quad \text{LCD} = 4$$

$$\frac{4}{1} \left[ \frac{3x}{1} + \frac{1}{2} \right] = \frac{4}{1} \cdot \frac{3}{4}$$

$$\frac{4}{1} \cdot 3x + \frac{4}{1} \cdot \frac{1}{2} = 3$$

$$12x + 2 = 3$$

$$-2 + 12x + 2 = -2 + 3$$

$$12x = 1$$

$$\frac{1}{12} \cdot \frac{12x}{1} = \frac{1}{12} \cdot 1$$

$$x = \frac{1}{12}$$

Ans: The solution is  $\frac{1}{12}$ .

check

$$\frac{3}{1} \left( \frac{1}{12} \right) + \frac{1}{2} = \frac{3}{4}$$

$$\frac{3 \cdot 1}{2 \cdot 3} + \frac{1}{2} = \frac{3}{4}$$

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

$$\frac{4}{1} \left[ \frac{1}{4} + \frac{1}{2} \right] = \frac{4}{1} \cdot \frac{3}{4}$$

$$\frac{4}{1} \cdot \frac{1}{4} + \frac{4}{1} \cdot \frac{1}{2} = 3$$

$$1 + 2 = 3$$

$$3 = 3$$

TRUE!

SDWK

12

26

23

$$\#22, \quad \frac{x}{3} + \frac{1}{2} = -\frac{1}{2} \quad \text{LCD} = 6$$

$$\frac{6}{1} \left[ \frac{x}{3} + \frac{1}{2} \right] = \frac{6}{1} \left[ -\frac{1}{2} \right]$$

$$\frac{6}{1} \cdot \frac{x}{3} + \frac{6}{1} \cdot \frac{1}{2} = -\frac{2 \cdot 3}{2}$$

$$2x + 3 = -3$$

$$-3 + 2x + 3 = -3 + (-3)$$

$$2x = -6$$

$$\frac{1}{2} \cdot \frac{2x}{1} = \frac{1}{2} \cdot \left( \frac{-6}{1} \right)$$

$$x = \frac{-2 \cdot 3}{2}$$

$$x = -3$$

Ans: The solution is  $-3$ .

check

$$\frac{(-3)}{3} + \frac{1}{2} = -\frac{1}{2}$$

$$-1 + \frac{1}{2} = -\frac{1}{2}$$

$$-\frac{1}{1} \cdot \frac{2}{2} + \frac{1}{2} = -\frac{1}{2}$$

$$-\frac{2}{2} + \frac{1}{2} = -\frac{1}{2}$$

$$-\frac{1}{2} = -\frac{1}{2}$$

TRUE!

LCD=2



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#23.  $\frac{x}{2} + \frac{4}{3} = -\frac{2}{3}$

$\frac{6}{1} \left[ \frac{x}{2} + \frac{4}{3} \right] = \frac{6}{1} \left[ -\frac{2}{3} \right]$

$\frac{6 \cdot x}{1 \cdot 2} + \frac{6 \cdot 4}{1 \cdot 3} = -\frac{2 \cdot 3 \cdot 2}{3}$

$3x + 2 \cdot 4 = -4$

$3x + 8 = -4$

$-8 + 3x + 8 = -8 + (-4)$

$3x = -12$

$\frac{1}{3} \cdot \frac{3x}{1} = \frac{1}{3} \cdot \left( \frac{-12}{1} \right)$

$x = -\frac{2 \cdot 2 \cdot 3}{3}$

$x = -4$

LCD=6

check

$\frac{(-4)}{2} + \frac{4}{3} = -\frac{2}{3}$

$\frac{6}{1} \left[ \frac{-4}{2} + \frac{4}{3} \right] = \frac{6}{1} \left[ -\frac{2}{3} \right]$

$-\frac{6 \cdot 4}{1 \cdot 2} + \frac{6 \cdot 4}{1 \cdot 3} = -\frac{2 \cdot 3 \cdot 2}{3}$

$-\frac{2 \cdot 3 \cdot 2 \cdot 2}{2} + \frac{2 \cdot 3 \cdot 2 \cdot 2}{3} = -2 \cdot 2$

$-2 \cdot 3 \cdot 2 + 2 \cdot 2 \cdot 2 = -4$

$-12 + 8 = -4$

$-4 = -4$

TRUE!

ANS: The solution is -4.

(C)

#24. Twice the sum of a number and 3 is -10.  
Find the number.

let  $x =$  unknown number

$2 \cdot \left[ \underset{\substack{\uparrow \\ \text{sum}}}{x + 3} \right] = \underset{\substack{\uparrow \\ \text{is}}}{-10}$

check

$2[(-8) + 3] = -10$

$2(-5) = -10$

$-10 = -10$

TRUE!

Solve:  $2 \cdot x + 2 \cdot 3 = -10$

$2x + 6 = -10$

$-6 + 2x + 6 = -6 + (-10)$

$2x = -16$

$\frac{1}{2} \cdot \frac{2x}{1} = \frac{1}{2} \cdot \left( \frac{-16}{1} \right)$

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

$x = -2 \cdot 2 \cdot 2$

$x = -8$

ANS: The unknown number is -8.

(E)

d = 6

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#25. If 38 is subtracted from 3 times a number, the result is 1. Find the number.

Let  $x =$  unknown number

$$3x - 38 = 1$$

$\swarrow$  "3 times a number"  
 $\uparrow$  "38 subtracted from"  
 $\uparrow$  "is"

Solve:

$$3x - 38 = 1$$

$$38 + 3x - 38 = 38 + 1$$

$$3x = 39$$

$$\frac{1}{3} \cdot \frac{3x}{1} = \frac{1}{3} \cdot \frac{39}{1}$$

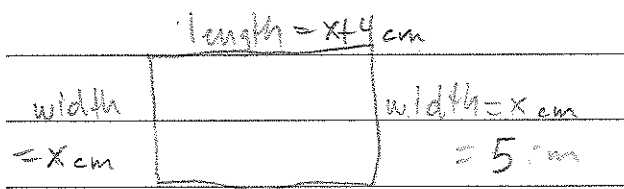
$$x = \frac{3 \cdot 13}{3}$$

$$x = 13$$

| SPWK                  | check            |
|-----------------------|------------------|
| 39<br>-38<br>---<br>1 | $3(13) - 38 = 1$ |
| 3 13                  | $39 - 38 = 1$    |
|                       | $1 = 1$          |
|                       | TRUE!            |

Ans: The unknown number is 13, (X)

# The length of a rectangle is 4cm longer than its width. If the perimeter is 28cm, find the length and width.



let  $x =$  width of rectangle (cm)

Perimeter = 28cm

$$(x) + (x) + (x + 4) + (x + 4) = 28$$

length =  $x + 4$  cm  
 $= 5 + 4$  cm  
 $= 9$  cm

check  
 $5 + 5 + 9 + 9 = 28$

$10 + 18 = 28$   
 $28 = 28$ , TRUE!

Ans: The length is 9cm, and the width is 5cm.

$$4x + 8 = 28$$

$$-8 + 4x + 8 = -8 + 28$$

$$4x = 20$$

$$\frac{1}{4} \cdot \frac{4x}{1} = \frac{1}{4} \cdot \frac{20}{1}$$

$$x = \frac{2 \cdot 2 \cdot 5}{2 \cdot 2}$$

$$x = 5$$

| SPWK |
|------|
| 20   |
| -8   |
| ---  |
| 12   |
| 4 5  |
| 2 2  |