Chapter 1 Review

Evaluate.

1. $4 \cdot 15t^2$ when $t = \frac{1}{3}$
2. $\frac{y}{x}$ when $x = \frac{3}{4}$ and $y = \frac{1}{2}$
3. $[5 + 3(5^2 \cdot 2)] \div 11$
4. $\frac{(27-25)^2+6}{64 \div 2^3 - (4^2-13)}$
5. $-y + 2$ when $y = -7$
6. $(14 + x) \div \frac{1}{2}$ when $x = 6$
7. $\left(5\frac{1}{3} - \frac{2}{9}\right) \div 4$

Determine if the given number is a solution of the equation.

8. $4(w - 2) = 21 + \frac{1}{2}; 5$
9. $8+w-6 = 21; 19$

Write an expression.

10. Three more than the sum of the square of 2 and 15.

Identify the property being shown.

11. $-8+8=0$
12. $(3+4)+5=3+(4+5)$
13. $(3 \cdot 4) \cdot 5=(4 \cdot 3) \cdot 5$

Simplify.

14. $-3x(6+x)+4(x-12)$
15. $8x-(2x+3)(4)$

Solve.

16. $16 = 6.5n - 3.3(2n - 5)$
17. $9(4h - 6) = 2(-13 - 2h)$
18. $1/3\ (6x + 3) = 2.6x - 5$

19. You are traveling 180 miles back to your home town for a class reunion. About 60 miles of the trip are through areas where the speed limit is 45 miles per hour and the rest of the trip is through areas where the speed limit is 55 miles per hour. Assuming that you can travel at the speed limits to get to the reunion, how long will it take you? Round your answer to the nearest tenth.
20. The length of a rectangle is 5 units less than 2 times the width. The perimeter is 22 units more than twice the width. Find the length and width.

Solve the absolute value equations, if possible.

21. $|x-2|-2=7$
22. $15-|x|=7$
23. $|4x|+2=12$
24. $|7x|+20=5$

Solve the proportion.

25. 14 is to 17 as x is to 136.
26. 2x is to 7 as 18 is to 21
27. $\frac{7}{5}=\frac{2c-1}{45}$
28. $\frac{7}{2}=\frac{b+4.5}{b-0.5}$

Solve the literal equation for the given value.

29. $M=L+rL$; r
30. $2(d-x)=\frac{y}{3}$; x

Determine whether or not the set of equations are equivalent. Explain.

31. 4x+7=3x-7 and x+7=-7
32. 2(x+2)=1/2(x-8) and 2x+2 = x/2 -8

Use dimensional analysis to convert.

33. The maximum speed of the Tupolev Tu-144 airliner is 694 m/s. What is the speed in kilometers per hour?
34. A model airplane flies 18 feet in 2 seconds. What is the airplane's speed in miles per hour? Round your answer to the nearest hundredth.

Use absolute deviation to solve.

35. The ideal diameter of a piston for one type of car is 88 mm. The actual diameter can vary from the ideal diameter by at most 0.007 mm. Find the minimum acceptable diameter for a piston.

Ch 1 Test Review

1. $4 \cdot 15\left(\frac{1}{3}\right)^2$

$4 \cdot \cancel{15}^{5} \cdot \frac{1}{\cancel{9}_{3}}$

$4 \cdot 5 \cdot \frac{1}{3}$

$\frac{20}{3}$

2. $\frac{y}{x}$

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

$\frac{1}{\cancel{2}} \cdot \frac{\cancel{4}^{2}}{3}$

$\frac{2}{3}$

3. $[5+3(5^2 \cdot 2)] \div 11$

$[5+3(25 \cdot 2)] \div 11$

$(5+3(50)) \div 11$

$5+150$

$\frac{155}{11}$

4. $\frac{(27-25)^2+6}{64 \div 2^3 - (4^2-13)}$

$\frac{2^2+6}{64 \div 8 - (16-13)}$

$8-(3)$

$\frac{4+6}{5}$

$\frac{10}{5}$

2

5. $-y+2$

$-(-7)+2$

$7+2$

9

6. $(14+x) \div \frac{1}{2}$

$(14+6) \cdot 2$

$20 \cdot 2$

40

7. $\left(\frac{16}{3} - \frac{2}{9}\right) \div 4$

$\frac{48}{9} - \frac{2}{9} \cdot \frac{1}{4}$

$\frac{\cancel{46}^{23}}{9} \cdot \frac{1}{\cancel{4}_{2}}$

$\frac{23}{18}$

8. $4(w-2) = 21 + \frac{1}{2}$

$4(5-2) = 21 + \frac{1}{2}$

$4(3) = 21 + \frac{1}{2}$

$12 \neq 21\frac{1}{2}$

NO

454
-26
27

9. $8 + w - 6 = 21$

$8 + 19 - 6 = 21$

$8 + 13 = 21$

$21 = 21$ ✓

yes

10. $(2^2 + 15) + 3$

or

$2^2 + 15 + 3$

or

$3 + 2^2 + 15$

11. inv. property of addition.

12. Associative property of addition.

13. commutative property of multiplication.

14. $-3x(6+x) + 4(x-12)$

$-18x - 3x^2 + 4x - 48$

$-3x^2 - 14x - 48$

15. $8x - (2x+3)(4)$

$8x - (8x+12)$

$8x - 8x - 12$

-12

16. $16 = 6.5n - 3.3(2n-5)$

$16 = 6.5n - 6.6n + 16.5$

$16 = -.1n + 16.5$

$-16.5 \quad -16.5$

$\frac{-.5}{-.1} = \frac{-.1n}{-.1}$

$\{5\} = n$

17. $9(4h-6) = 2(-13-2h)$

$36h - 54 = -26 - 4h$

$+4h \quad +4h$

$40h - 54 = -26$

$+54 \quad +54$

$\frac{40h}{40} = \frac{28}{40}$

$h = \{.7\}$
$\{10\}$

18. $\frac{1}{3}(6x+3) = 2.6x - 5$

$2x + 1 = 2.6x - 5$

$-2x \quad -2x$

$1 = .6x - 5$

$+5 \quad +5$

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

$\{10\} = x$

19. $\frac{60}{45} + \frac{180-60}{55} =$ total time

* remember $d = rt$

$\frac{d}{r} = t$

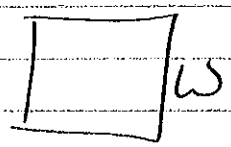
$\frac{60}{45} + \frac{120}{55}$

$\frac{4}{3} + \frac{24}{11}$

$\frac{44}{33} + \frac{72}{33}$

$\frac{116}{33}$ hours $\approx$ (3.5 hr)

20.



$P = 2l + 2w$

$22 + 2w = 2w + 2(2w-5)$

$11 + w = w + 2w - 5$

$11 + w = 3w - 5$

$16 = 2w$

$8 = w$

width = 8 units

length = 11 units.

$2w - 5$

$2 \cdot 8 - 5$

$16 - 5$

21. $|x-2| - 2 = 7$

$+2 \quad +2$

$|x-2| = 9$

$x - 2 = 9$ or $x - 2 = -9$

$+2 \quad +2$ $\quad$ $+2 \quad +2$

$x = 11$ $\quad$ $x = -7$

$x = \{-7, 11\}$ * list least to greatest.

22. $15 - |x| = 7$

$-15 \quad -15$

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

$|x| = 8$

$x = \{-8, 8\}$

23. $|4x| + 2 = 12$

$-2 \quad -2$

$|4x| = 10$

$\frac{4x}{4} = \frac{10}{4}$ or $\frac{4x}{4} = \frac{-10}{4}$

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

24. $|7x| + 20 = 5$

$-20 \quad -20$

$|7x| = -15$

$\emptyset$

* absolute value cannot be negative.

other acceptable answers are no solutions or $\{\}$

25. $\frac{14}{17} = \frac{x}{136}$

$\frac{1904}{17} = \frac{17x}{17}$

$\{112\} = x$

26. $\frac{2x}{7} = \frac{18}{21}$

$\frac{42x}{42} = \frac{126}{42}$

$x = \{3\}$

27. $\frac{7}{5} = \frac{2c-1}{45}$

$10c - 5 = 315$

$+5 \quad +5$

$\frac{10c}{10} = \frac{320}{10}$

$c = \{32\}$

28. $\frac{7}{2} = \frac{b+4.5}{b-0.5}$

$2b + 9 = 7b - 3.5$

$-2b \quad -2b$

$9 = 5b - 3.5$

$+3.5 \quad +3.5$

$\frac{12.5}{5} = \frac{5b}{5}$

$\{2.5\} = b$

29. $m = L + rL$; r

$-L \quad -L$

$\frac{m-L}{L} = \frac{rL}{L}$

$\frac{m-L}{L} = r$ or $\frac{m}{L} - 1 = r$

30. $\frac{2(d-x)}{2} = \frac{y}{3} \cdot \frac{1}{2}$ * remember $\div 2$ is the same thing as multiplying by $\frac{1}{2}$

$d - x = \frac{y}{6}$

$-d \quad -d$

$\frac{-x}{-1} = \frac{\frac{y}{6} - d}{-1}$

$x = -\frac{y}{6} + d$

31. $4x+7 = 3x-7$

$-3x \quad -3x$

$x+7 = -7$

yes, the correct usage of the subtraction property of equality was used.

32. $2(x+2) = \frac{1}{2}(x-8)$

$2x+4 = \frac{x}{2} - 4$

NO; the distributive property of multiplication was not used correctly.

33. $\frac{694 mi}{8} \cdot \frac{36 \cancel{00} \cancel{sec}}{1 (hr)} \cdot \frac{1 (km)}{1000 \cancel{m}}$

$\frac{694 \cdot 36}{10} = \frac{24984}{10}$

2498.4 km/hr

9

31. $\frac{18 \cancel{ft}}{2 \cancel{sec}} \cdot \frac{1 mi}{5280 \cancel{ft}} \cdot \frac{3600 \cancel{sec}}{1 hr}$

$\frac{9 \cdot 360}{528}$

6.14 mi/hr

35. $.007 = |x - 88|$

smallest 87.993 largest 88.007

87.993mm