

Math 303

p. 500

#1. (a)  $7.89 = 789\%$  (b)  $193.1 = 19310\%$  (c)  $\frac{5}{6} = 83\frac{1}{3}\%$

(d)  $\frac{1}{8} = 12.5\%$  (e)  $\frac{5}{8} = 62.5\%$  (f)  $\frac{4}{5} = 80\%$

#2. (a)  $16\% = 0.16$  (b)  $\frac{1}{5}\% = 0.2\% = 0.002$

(c)  $13\frac{2}{3}\% = 0.13\bar{6}$  (d)  $\frac{1}{3}\% = 0.00\bar{3}$

#3. (a) 4 for every 100 (b) 2 for every 50

(c) 1 for every 25 (d) 8 for every 200

(e) 0.5 for every 12.5

#5. (a)  $N = 0.06(34)$   
 $= 2.04$

$$\begin{array}{r} 34 \\ 0.06 \\ \hline 2.04 \end{array}$$

(b)  $17 = N \times 34$   
 $N = \frac{17}{34} = \frac{1}{2} = 50\%$

(c)  $18 = 0.3N$   
 $N = \frac{18}{0.3} = \frac{180}{3} = 60$

(d)  $N = 0.07(49)$   
 $= 3.43$

$$\begin{array}{r} 49 \\ 0.07 \\ \hline 3.43 \end{array}$$

#6. (a)  $\frac{5}{100} \cdot X = \frac{5X}{100}$

(b)  $\frac{1}{10}N = a$

$N = 10a$

The amount is  $10a$ .

#7.  $\frac{3}{4} \cdot 84 = \frac{3}{4} \cdot \frac{21}{1} = 63$

Marc sold 63 boxes of candy.

#8.  $16000 + 16000(0.06)$

$= 16000 + 960$

$= 16960$

Gail makes \$16,960 this year.

#9.  $N + 0.07N = 27,285$

$1.07N = 27,285$

$N = \frac{27,285}{1.07} = 25,500$

Gail made \$25,500 last year.

$$\begin{array}{r} 25500 \\ 107 \overline{) 2728500} \\ \underline{-214} \\ 588 \\ \underline{-535} \\ 535 \\ \underline{-535} \\ 0 \end{array}$$

$$\begin{array}{r} \#10. \text{ (a) Bill } 260 \\ \quad \times 0.85 \\ \hline \quad 1300 \\ \quad 20800 \\ \hline 22100 \end{array}$$

Bill sold the most by selling 221 newspapers.

$$\text{(b) Joe } N = \frac{180}{200} = \frac{90}{100} = 90\%$$

Joe sold the greatest percent of his newspapers by selling 90% of his papers.

$$\text{(c) Ron } 0.8N = 212$$

$$\begin{array}{r} 265. \\ 0.8 \overline{)2120} \\ \underline{-16} \phantom{0} \\ 52 \\ \underline{-48} \\ 40 \\ \underline{40} \\ 0 \end{array}$$

Ron began with the most newspapers.  
He had 265.

$$\#11. N \times 35 = 35 - 28$$

$$N = \frac{7}{35} = \frac{1}{5} = 20\%$$

The discount is 20%.

$$\#12. N(159,000) = (195,000 - 159,000)$$

$$N = \frac{36}{159}$$

$$\begin{array}{r} 0.22 \\ 159 \overline{)36.00} \\ \underline{-318} \\ 420 \\ \underline{-318} \\ 102 \end{array}$$

The approximate increase in the appraisal was 23%.

$$\#13. N(9) = 18 - 9$$

$$N = \frac{9}{9} = 1$$

Xuan's weight increased 100% in 6 months.

$$\#14. (1 - 0.2)28 = 0.8(28) = 22.4$$

The sale price was \$22.40.

$$\#15. 320 \left(\frac{1}{20}\right) = 16$$

$$320 + 16 = 336$$

The airline ticket cost \$336.

$$\#16. N(80) = 52$$

$$N = \frac{52}{80} = \frac{13}{20} = \frac{65}{100} = 65\%$$

Bill answered 65% of the questions correctly.

$$\#17. 80,000(0.04) = 800(4) = 3200$$

The broker receives \$3200.

$$\#18. \frac{2}{3} \times 1800 = 2 \times 600 = 1200$$

One thousand two hundred of the employees favored a new insurance program.

#19.  $\frac{325}{500} = \frac{650}{1000} = \frac{65}{100} = 65\%$  ,  $\frac{600}{1000} = \frac{60}{100} = 60\%$

Therefore  $\frac{325}{500}$  represents the greater percent.

#20. (a)  $\begin{array}{r} \$9.50 \\ \times 8 \\ \hline \$76.00 \end{array}$        $\begin{array}{r} 95 \\ \times 0.8 \\ \hline 76.0 \end{array}$       Both cost \$76.      (Note  $100\% - 20\% = 80\%$ )  
Pay 80% of the price.

(b) It would be more economical to buy 10 items since it would be buying 10 for the price of 8.

#21.  $N \times (45) = 45 - \frac{240}{6}$   
 $45N = 5$   
 $N = \frac{5}{45} = \frac{1}{9} = 11\frac{1}{9}\%$   
You would save  $11\frac{1}{9}\%$  of the cost by buying the six-pack.

#22.  $0.9N = 1.2(330)$   
 $N = \frac{1.2(330)}{0.9} = \frac{12(330)}{9}$   
 $= 4(110) = 440$   
John should mark the price to be \$440.

#23. (a) 15% of 22  
 $(10\% \text{ of } 22) + \frac{1}{2}(10\% \text{ of } 22)$   
 $= 2.2 + 1.1$   
 $= 3.3$

(b) 20% of 120  
 $\frac{20}{100} \times \frac{120}{1} = 2 \times 12 = 24$

(c) 5% of \$38  
 $\frac{1}{20} \times \frac{\$38}{1} = \$1.90$

(d) 25% of \$98  
 $\frac{1}{4} (\$100 - 2) = \$25 - \frac{1}{2}$   
 $= \$24.50.$

#27.  $1.1(1.1)N = 100,000$   
 $1.21N = 100,000$   
 $N = \frac{100,000}{1.21}$

Ms. Price salary was \$82,644.63 two years ago.

$$\begin{array}{r} 82644.62 \\ 121 \overline{) 10000000.00} \\ \underline{-968} \phantom{00} \\ 320 \phantom{00} \\ \underline{-242} \phantom{00} \\ 780 \phantom{00} \\ \underline{-726} \phantom{00} \\ 540 \phantom{00} \\ \underline{-484} \phantom{00} \\ 560 \phantom{00} \\ \underline{-484} \phantom{00} \\ 760 \phantom{00} \\ \underline{-726} \phantom{00} \\ 340 \phantom{00} \\ \underline{-242} \phantom{00} \\ 98 \phantom{00} \end{array}$$

p. 501

#29. No, since 56% is more than double 25%  
but \$950 is less than double of \$500.

#31. (a) 10% of \$30 is \$3  
15% of \$30 is \$3 + 1.50 = \$4.50.  
The tip on a \$30 bill would be \$4.50.

(b) 50%

(c) 100%

#32.  $0.68N = 374$

$$N = \frac{374}{0.68}$$

$$\begin{array}{r} 550 \\ 68 \overline{) 37400} \\ \underline{-340} \phantom{00} \\ 340 \phantom{00} \\ \underline{-340} \phantom{00} \\ 0 \phantom{00} \end{array}$$

There are 550 students in the school.

# Worksheet

$$\begin{array}{r} \#1. \quad 86 \\ \times 0.49 \\ \hline 774 \\ + 3440 \\ \hline 42.14 \end{array}$$

$$\begin{array}{r} \#2. \quad 125 \\ \times 0.6 \\ \hline 75.0 \end{array}$$

$$\begin{array}{r} \#3. \quad 32 \\ \times 3 \\ \hline 96 \end{array}$$

$$\begin{array}{r} \#4. \quad 725 \\ \times 0.036 \\ \hline 4350 \\ + 21750 \\ \hline 26.100 \end{array}$$

$$\begin{array}{r} \#5. \quad 7.08 \\ \times 3 \\ \hline 21.24 \end{array}$$

$$\begin{array}{r} \#6. \quad 23 \\ \times 0.7 \\ \hline 16.1 \end{array}$$

$$\begin{aligned} \#7. \quad 108 \times \frac{3}{4} \\ &= \frac{27}{1} \times \frac{3}{4} \\ &= 81 \end{aligned}$$

$$\begin{array}{r} \#8. \quad 40 \\ \times 6 \\ \hline 240 \end{array}$$

$$\begin{aligned} \#9. \quad \frac{1}{7} \times 35 &= 5 \\ \#10. \quad \frac{9}{4} \times 4.80 \\ &= \frac{9}{4} \times \frac{48}{10} \\ &= 10.8 \end{aligned}$$

$$\begin{aligned} \#11. \quad 3 &= N \times 4 \\ N &= \frac{3}{4} = 75\% \end{aligned}$$

$$\begin{aligned} \#12. \quad N \times 45 &= 72 \\ N &= \frac{72}{45} = \frac{8}{5} \\ &= 1\frac{3}{5} = 160\% \end{aligned}$$

$$\begin{aligned} \#13. \quad N \times 100 &= 17 \\ N &= \frac{17}{100} = 17\% \end{aligned}$$

$$\begin{aligned} \#14. \quad 586 &= N \times 1465 \\ N &= \frac{586}{1465} = 0.4 \\ &= 40\% \end{aligned}$$

$$\begin{aligned} \#15. \quad N \times 500 &= 30 \\ N &= \frac{30}{500} = \frac{6}{100} \\ &= 6\% \end{aligned}$$

$$\begin{aligned} \#16. \quad \frac{10}{3} &= N \times \frac{31}{6} \\ N &= \frac{10}{3} \times \frac{6}{31} = \frac{20}{31} \end{aligned}$$

$$\begin{array}{r} 0.64 \\ 31 \overline{) 20.00} \\ \underline{-186} \\ 140 \\ \underline{-124} \\ 16 \end{array}$$

$64\frac{16}{31}\%$

$$\begin{aligned} \#17. \quad N \times 6.3 &= 2.1 \\ N &= \frac{2.1}{6.3} = \frac{1}{3} \\ &= 33\frac{1}{3}\% \end{aligned}$$

$$\begin{aligned} \#18. \quad \frac{5}{8} &= N \times 0.4 \\ N &= \frac{5}{8} \times \frac{10}{4} = \frac{50}{32} \\ &= \frac{25}{16} = 1\frac{9}{16} = 156\frac{1}{4}\% \end{aligned}$$

$$\begin{array}{r} 0.56 \\ 16 \overline{) 9.00} \\ \underline{80} \\ 100 \\ \underline{96} \\ 4 \end{array}$$

$$\begin{aligned} \#19. \quad 0.18N &= 72 \\ N &= \frac{72}{0.18} = 400 \end{aligned}$$

$$\begin{aligned} \#20. \quad \frac{5}{4}N &= 105 \\ N &= \frac{105}{1} \times \frac{4}{5} = 84 \end{aligned}$$

$$\begin{aligned} \#21. \quad 0.045N &= 135 \\ N &= \frac{135}{0.045} = \frac{3}{0.001} \\ &= 3000 \end{aligned}$$

$$\begin{aligned} \#22. \quad \frac{3}{4}N &= 12 \\ N &= \frac{12}{1} \times \frac{4}{3} \\ &= 16 \end{aligned}$$

$$\begin{aligned} \#23. \quad \frac{13}{400}N &= 26 \\ N &= \frac{26}{1} \cdot \frac{400}{13} \\ &= 800 \end{aligned}$$

Worksheet

#24.  $(\frac{1}{2})N = 553$

$$N = \frac{553}{\frac{1}{2}} \cdot \frac{6}{7}$$

= 474

#25.  $1 \times N = 37$

$N = 37$

#26.  $2N = 86$

$N = 43$

#27.	840	940.8	840.00
	<u>x 1.12</u>	<u>x 0.88</u>	<u>- 827.90</u>
	1680	75264	12.10
	8400	+ 752640	
	<u>+ 84000</u>	<u>827.904</u>	
	940.80		

Kim's salary is now \$12.10 less than her original salary.

#28. 9780  
x 0.04  
391.20

Pat earned \$891.20 last week.

#29.  $\frac{3}{4} \times \frac{23,400}{1} = 3 \times 5850$   
 $= 17550$

10% : 1755.00

5% : 877.50

15% : 2632.50

The agency received a commission of \$2632.50.

#30. 75  $\overline{) 1.5750}$   
150  
75  
75  
75

The \$7500 investment has an annual rate of 4.2%.

The \$8600 investment has an annual rate of 4%.

Sam receives a higher rate on the \$7500 investment.

86  $\overline{) 3.44}$   
344  
344