TEST YOURSELF ANSWERS AND EXPLANATIONS

Test Yourself 1

1. 0	**5.** 0	**9.** 2	**13.** 1	**17.** 12
2. 3	**6.** 9	**10.** 0	**14.** 3	**18.** 0
3. 0	**7.** 5	**11.** 0	**15.** 5	**19.** 1
4. 6	**8.** 4	**12.** 0	**16.** 9	**20.** 6

Test Yourself 2

1. 180	**3.** 1300	**5.** 0.986	**7.** 45	**9.** 76,100
2. 0.05	**4.** 36.2	**6.** 0.0012	**8.** 0.08328	**10.** 6.886

Test Yourself 3

1. 44.809	**3.** 82.1	**5.** 4.19	**7.** ~~100.893~~ 100.863	**9.** 0.69
2. 102.9531	**4.** 18.01	**6.** 34.23	**8.** 17.19	**10.** 837.92

Test Yourself 4

1. 20.272	**3.** 60	**5.** 1.51	**7.** 36.03	**9.** 2.43
2. 10.12	**4.** 1.35	**6.** 3	**8.** 3.4	**10.** 2.52

Test Yourself 5

1. $\frac{32}{20} = 1\frac{12}{20} = 1\frac{3}{5}$

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

3. $\frac{5}{6}$

4. $\frac{1}{5}$

5. $\frac{47}{24} = 1\frac{23}{24}$

6. $\frac{17}{12} = 1\frac{5}{12}$

7. $\frac{2}{6} = \frac{1}{3}$

8. $\frac{7}{24}$

9. $\frac{14}{12} = 1\frac{2}{12} = 1\frac{1}{6}$

10. $\frac{2}{9}$

Test Yourself 6

1. $\frac{2}{5}$

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

3. 2

4. $\frac{15}{3} = 5$

5. $\frac{1}{3}$

6. $\frac{21}{16} = 1\frac{5}{16}$

7. $\frac{5}{39}$

8. $\frac{7}{9}$

9. $\frac{4}{21}$

10. 1

Test Yourself 7

1. $0.5 = 50\%$
2. $0.875 = 87\frac{1}{2}\%$
3. $0.833 = 83\frac{1}{3}\%$
4. $0.75 = 75\%$
5. $0.75 = 75\%$
6. $0.666 = 66\frac{2}{3}\%$
7. $0.60 = 60\%$
8. $0.40 = 40\%$
9. $0.25 = 25\%$
10. $0.40 = 40\%$

Test Yourself 8

1. $32 \times 0.10 = 3.2$
2. $8 \div 0.25 = 32$
3. $\frac{12}{24} = \frac{1}{2} = 0.5 = 50\%$
4. $360 \times 0.20 = 72$
5. $\frac{5}{60} = \frac{1}{12} = 0.0833 = 8\frac{1}{3}\%$
6. $12 \div 0.08 = 150$
7. $36 \times 0.06 = 2.16$
8. $25 \div 0.05 = 500$
9. $\frac{70}{140} = \frac{1}{2} = 0.5 = 50\%$
10. $\frac{19}{100} = 0.19 = 19\%$

Test Yourself 9

1. $+13$
2. $+3$
3. -8
4. -5
5. -38
6. -45
7. $+17$
8. -28.8
9. $-4\frac{1}{4}$
10. 0

Test Yourself 10

1. $+6$
2. $+25$
3. -17
4. -55
5. $+62$
6. $+48$
7. -7.3
8. $-41\frac{3}{4}$
9. -70
10. -0.6

Test Yourself 11

1. $+40$
2. -36
3. $+126$
4. $+40$
5. -19.14
6. -31.5
7. $+47\frac{1}{8}$
8. -9
9. 0
10. $+144$

Test Yourself 12

1. -3
2. $+3$
3. $+5$
4. -25
5. -8
6. $+0.7$
7. $+2$
8. $+8.2$
9. -1
10. 0

Test Yourself 13

1. $x = 12$
2. $x = 21$
3. $x = 33$
4. $x = 36$
5. $x = 4$
6. $x = 24$
7. $x = 10$
8. $x = 26$
9. $x = 9$
10. $x = 33$

Test Yourself 14

1. $A = bh$
   $A = 8 \times 4 = 32$ sq. ft.

2. $A = \frac{1}{2}bh$
   $A = \frac{1}{2}(7 \times 8)$
   $A = \frac{1}{2}(56) = 28$ sq. in.

3. $A = s^2$
   $A = 1^2 = 1$ sq. mile

4. $A = \frac{1}{2}bh$
   $A = \frac{1}{2}(5 \times 3)$
   $A = \frac{1}{2}(15) = 7\frac{1}{2}$ sq. yds.

5. $A = \pi r^2$
   $A = \pi 2^2$
   $A = 4\pi$ sq. cm

6. $A = bh$
   $A = 12 \times 6 + (12 - 8) \times 6$
   $A = 12 \times 6 + 4 \times 6$
   $A = 72 + 24 = 96$ sq. rds.

7. $A = bh$
   $A = 10 \times 8 = 80$ sq. yds.
   $A = \frac{1}{2}bh$
   $A = \frac{1}{2}(10 \times 3) = \frac{1}{2}(30)$
   $A = 15$ sq. yds.
   $80 + 15 = 95$ sq. yds.

8. $A = \pi r^2$
   $A = \pi 6^2$
   $A = 36\pi$ sq. ft.

9. $A = \frac{1}{2}bh$
   $A = \frac{1}{2}(26 \times 2) = \frac{1}{2}(52)$
   $A = 26$ sq. ft.

10. $A = bh$
    $A = 6 \times 5 + 20 \times (17 - 5)$
    $A = 6 \times 5 + 20 \times 12$
    $A = 30 + 240 = 270$ sq. meters

Test Yourself 15

1. $P = 6 + 5 + (6 - 2) + 8 + 2 + (8 + 5)$
   $P = 38$ in.

2. $V = \pi r^2 h$
   $V = \pi \times 2^2 \times 6$
   $V = \pi \times 4 \times 6$
   $V = 24\pi$ cu. in.

3. $C = 2\pi r$
   $C = 2 \times \pi \times 7$
   $C = 14\pi$ cm

4. $V = lwh$
   $V = 8 \times 3 \times 4$
   $V = 96$ cu. in.

5. $V = s^3$
   $V = 4^3 = 4 \times 4 \times 4$
   $V = 64$ cu. yd.

6. $P = 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3$
   $P = 24$ cm

7. $P = 8 + 8 + 6 = 22$ ft.

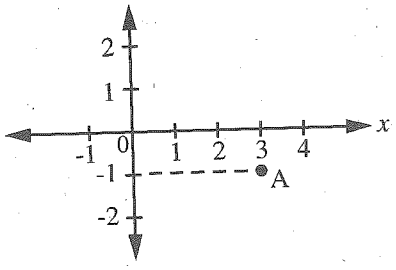
8. $P = 1 + 1 + 1 + 1 = 4$ in.

Test Yourself 16

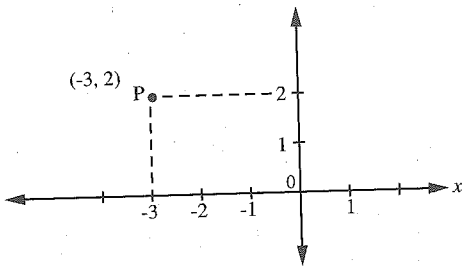
1. 80°
2. 240°
3. 90°
4. 55°
5. 140°
6. 120°
7. 180°
8. 50°

Test Yourself 17

1. (3,−1) A vertical line through A meets the x-axis at 3; therefore, the x-coordinate is 3. A horizontal line through A meets the y-axis at -1; therefore, the y-coordinate is -1. The coordinates of point A are (3,−1).



2. Point P has coordinates $x = -3$ and $y = 2$.



3. Because both coordinates are positive numbers, the point must be located in the upper-right quadrant of the graph. Location along the x-axis is always stated first, so the correct answer is point B.

4. Start by moving in a positive direction along the x-axis. Then you must move along the y-axis in a negative direction. The actual number of spaces you move is irrelevant, since point C is the only possible answer.

5. Again, make your moves in order. First move in the positive direction along the x-axis. Because the second coordinate is 0, make no move on the y-axis. Point C is your answer.

Test Yourself 18

To solve any type of motion problem, it is helpful to organize the information in a chart with columns for Rate, Time, and Distance. A separate line should be used for each moving object. Be very careful of units used. If the rate is given in *miles per hour*, the time must be in *hours* and the distance will be in *miles*.

1. 300 miles

	Rate	× Time	= Distance
Going	60 mph	x	$60x$
Return	50 mph	$x + 1$	$50x + 50$

Let x = time of trip at 60 mph

The distances are, of course, equal.

$60x = 50x + 50$

$10x = 50$

$x = 5$

R × T = D; 60 mph × 5 hours = 300 miles

2. 40 mph

	Rate	× Time	= Distance
Slow Car	x	3	$3x$
Fast Car	$x + 20$	3	$3x + 60$

Let x = rate of slower car

$$\underset{300\text{ miles}}{\overset{3x+60+3x}{\longleftrightarrow}}$$

$3x + 3x + 60 = 300$

$6x = 240$ mph

$x = 40$ mph

3. 90 mph

	Rate	× Time	= Distance
Passenger	$x + 45$	3	$3x + 135$
Freight	x	3	$3x$

Let x = rate of freight train

$3x + 135 + 3x = 405$

$6x = 270$

$x = 45$

$x + 45 = 45 + 45 = 90$ mph

4. 5 p.m.

	Rate	× Time	= Distance
Susie	30	x	$30x$
Richard	45	$x - 2$	$45x - 90$

Let x = time Susie traveled

Richard left 2 hours later than Susie, so he traveled for $x - 2$ hours.

Since Richard caught up to Susie, the distances are equal.

$30x = 45x - 90$

$90 = 15x$

$x = 6$ hours

Susie traveled for 6 hours. 11 a.m. + 6 hours = 5 p.m. when Richard caught up to her.

5. 120 miles

	Rate	× Time	= Distance
Going	40	x	$40x$
Return	30	$7 - x$	$210 - 30x$

Let x = time for trip out

Total driving time = 8 − 1 = 7 hours

Therefore, time for return trip = $7 - x$ hours

$40x = 210 - 30x$

$70x = 210$

$x = 3$ hours

R × T = D; 40 mph × 3 hours = 120 miles

6. 44 mph

	Rate	×	Time	=	Distance
Slow Car	x		3.5		$3.5x$
Fast Car	$x+6$		3.5		$3.5(x+6)$

Let x = rate of slow car
The cars traveled from 10 a.m. to 1:30 p.m., which is 3.5 hours.

$$3.5x + 3.5(x + 6) = 287$$
$$3.5x + 3.5x + 21 = 287$$
$$7x + 21 = 287$$
$$7x = 266$$
$$x = 38 \text{ mph}$$
$$x + 6 = 44 \text{ mph}$$

7. 9 a.m.

	Rate	×	Time	=	Distance
Before Noon	50		x		$50x$
After Noon	40		$8-x$		$40(8-x)$

Let x = hours traveled before noon
Note that the 8 hours must be divided into two parts.

$$50x + 40(8 - x) = 350$$
$$50x + 320 - 40x = 350$$
$$10x = 30$$
$$x = 3 \text{ hours}$$

If he traveled 3 hours before noon, he left at 9 a.m.

8. 9:30 p.m.

	Rate	×	Time	=	Distance
3 p.m. Plane	600		x		$600x$
3:30 p.m. Plane	650		$x-\frac{1}{2}$		$650(x-\frac{1}{2})$

Let x = travel time of 3 p.m. plane.

The later plane traveled $\frac{1}{2}$ hour less.

$$600x = 650\left(x - \frac{1}{2}\right)$$
$$600x = 650x - 325$$
$$325 = 50x$$
$$x = 6\frac{1}{2} \text{ hours}$$

The plane that left at 3 p.m. traveled for $6\frac{1}{2}$ hours. The time then was 9:30 p.m.

9. 8 miles

	Rate	× Time	= Distance
Going	4	x	$4x$
Return	2	$6-x$	$2(6-x)$

Let x = time for walk out into country
The soldier was gone for 6 hours. Therefore, time of trip back = $6 - x$.

$4x = 2(6 - x)$
$4x = 12 - 2x$
$6x = 12$
$x = 2$ hours
R × T = D; 2 hours at 4 mph = 8 miles

10. 6 hours

	Rate	× Time	= Distance
Faster Car	36	x	$36x$
Slower Car	31	x	$31x$

Let x = travel time

$36x - 31x = 30$
$5x = 30$
$x = 6$ hours

Test Yourself 19

1. 12 minutes

$$\frac{\text{Time actually spent}}{\text{Time needed to do entire job alone}} \qquad \underset{\text{John}}{\frac{x}{20}} + \underset{\text{Steve}}{\frac{x}{30}} = 1$$

Multiply all terms by 60 to clear the fractions.

$3x + 2x = 60$
$5x = 60$
$x = 12$

2. 30 minutes
It takes Mr. Powell x minutes to mow the lawn.
Rick alone will take twice as long, or $2x$ minutes.

$$\frac{\text{Time actually spent}}{\text{Time needed to do entire job alone}} \qquad \underset{\text{Mr. Powell}}{\frac{20}{x}} + \underset{\text{Rick}}{\frac{20}{2x}} = 1$$

Multiply all terms by $2x$ to clear the fractions.

$40 + 20 = 2x$
$60 = 2x$
$x = 30$ minutes

3. $\frac{5-x}{5}$

In x days, he has painted $\frac{x}{5}$ of the barn. To find what part is still unpainted, subtract the part completed from $1\left(\frac{5}{5}\right)$.

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

4. $3\frac{3}{5}$ hours

$$\frac{\text{Time actually spent}}{\text{Time needed to do entire job alone}} \qquad \begin{matrix}\text{Mary} & & \text{Ruth} \\ \frac{x}{6} & + & \frac{x}{9} = 1\end{matrix}$$

Multiply all terms by 18 to clear the fractions.

$3x + 2x = 18$

$5x = 18$

$x = 3\frac{3}{5}$

5. 6 hours

$$\frac{\text{Time actually spent}}{\text{Time needed to do entire job alone}} \qquad \begin{matrix}\text{Inlet} & & \text{Drain} \\ \frac{x}{3} & - & \frac{x}{6} = 1\end{matrix}$$

Multiply all terms by 6 to clear the fractions.

$2x - x = 6$

$x = 6$

Note that the two fractions are subtracted because the drainpipe does not help the inlet pipe but rather works against it.

6. 6 hours

$$\frac{\text{Time actually spent}}{\text{Time needed to do entire job alone}} \qquad \begin{matrix}\text{Tractor} & & \text{Plow} \\ \frac{2}{4} & + & \frac{x}{12} = 1\end{matrix}$$

You do not need to calculate the answer. Because half the job $\left(\frac{2}{4}\right)$ was completed by the tractor, the other half $\left(\frac{6}{12}\right)$ was done by the plow, and x, therefore, must equal 6.

7. 3 hours

$$\frac{\text{Time actually spent}}{\text{Time needed to do entire job alone}} \qquad \begin{matrix}\text{Michael} \\ \frac{2}{6}\end{matrix} + \begin{matrix}\text{Barry} \\ \frac{2}{x}\end{matrix} = 1$$

Multiple all the terms by $6x$ to clear the fractions.

$2x + 12 = 6x$

$12 = 4x$

$x = 3$

8. 12 minutes

$$\frac{\text{Time actually spent}}{\text{Time needed to do entire job alone}} \qquad \begin{matrix}\text{Girl} \\ \frac{x}{20}\end{matrix} + \begin{matrix}\text{Brother} \\ \frac{x}{30}\end{matrix} = 1$$

Multiply all the terms by 60 to clear the fractions.

$3x + 2x = 60$

$5x = 60$

$x = 12$

9. 7 hours 12 minutes

$$\frac{\text{Time actually spent}}{\text{Time needed to do entire job alone}} \qquad \begin{matrix}\text{Fast Press} \\ \frac{x}{12}\end{matrix} + \begin{matrix}\text{Slower Press} \\ \frac{x}{18}\end{matrix} = 1$$

Multiply all the terms by 36 to clear the fractions.

$3x + 2x = 36$

$5x = 36$

$x = 7.2$ hours $= 7$ hours 12 minutes

10. 3 days

If John completes $\frac{1}{4}$ of the job in $\frac{3}{4}$ day, it will take him 4 times as long to do the entire job.

$$\frac{4}{1} \times \frac{3}{4} = 3$$

answers exercises

Exercise 3

1. D	9. D	17. C	25. D	33. A
2. A	10. B	18. C	26. C	34. C
3. D	11. B	19. B	27. C	35. B
4. D	12. C	20. C	28. C	36. D
5. C	13. C	21. A	29. A	37. B
6. B	14. C	22. A	30. D	38. C
7. C	15. A	23. D	31. C	39. B
8. A	16. C	24. B	32. A	40. D

1. **The correct answer is (D).** To find the average, add all the numbers and divide the sum by the number of terms.

   $42 + 35 + 28 + 30 + 24 + 27 = 186$
   $186 \div 6 = 31$

2. **The correct answer is (A).**

   14 words = 10 words + 4 words

   10 words cost 52 cents

   4 words @ 2.5 cents =
   $4 \times 2.5 = 10$ cents

   52 cents + 10 cents = 62 cents

3. **The correct answer is (D).**

   500 − 125 = 375 pads @ \$0.04 = \$15.00

   130 − 45 = 85 pencils @ \$0.03 = \$2.55

   50 dozen − 4 dozen = 46 dozen rubber bands @ \$0.02 = \$0.92

   \$15 + \$2.55 + \$0.92 = \$18.47

4. **The correct answer is (D).**

   \$60 × 0.10 = \$6 (employee discount)

   \$60 − \$6 = \$54

   \$54 × 0.20 = \$10.80 (sale discount)

   \$54 − \$10.80 = \$43.20

5. **The correct answer is (C).**

   9 square feet = 1 square yard
   270 sq. ft. ÷ 9 = 30 sq. yds.

6. **The correct answer is (B).**

   The whole pie is 100%.

   Each part is $\frac{1}{40}$.

   $100 \div 40 = 2.5\%$

7. **The correct answer is (C).** First find out how much sugar is needed for one quart of punch.

   $$\frac{3}{4}\text{ cups} \div 6 = \frac{3}{4} \div \frac{6}{1} = \frac{\cancel{3}^{1}}{4} \times \frac{1}{\cancel{6}_{2}} = \frac{1}{8}$$

   For 9 quarts of punch:

   $$9 \times \frac{1}{8} = \frac{9}{8} = 1\frac{1}{8}$$

8. **The correct answer is (A).** 45 badges × 4 inches each = 180 inches needed. There are 36 inches in one yard. 180 inches ÷ 36 = 5 yards of ribbon needed.

9. **The correct answer is (D).**

   1 gallon = 4 quarts

   4 gals. = 16 qts.

   $16 \text{ qts.} \times 42\frac{1}{2} = 16 \times \$0.425 = \$6.80$

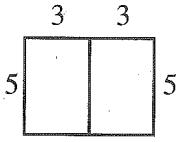
10. The correct answer is (B).

$\frac{3}{5}$ of 200 = 120 columns by machine @ 40 columns per hour = 3 hours

200 − 120 = 80 columns without machine @ 20 columns per hour = 4 hours

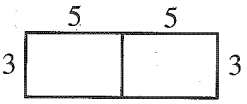
3 hours + 4 hours = 7 hours to complete the job.

11. The correct answer is (B). Perimeter = $2l + 2w$. If the two long sides are together, the perimeter will be 5 + 3 + 3 + 5 + 3 + 3 = 22



If the two short sides are together, the perimeter will be

3 + 5 + 5 + 3 + 5 + 5 = 26



26 − 22 = 4 feet shorter

12. The correct answer is (C). To remove a % sign, divide the number by 100. Thus, $1\% = \frac{1}{100} = 0.01$. 1% of 8 is the same as 1% times 8 = 0.01 × 8 = 0.08

13. The correct answer is (C).

$$
\begin{array}{r}
8.13 \\
10\overline{)81.30} \\
\underline{80} \\
13 \\
\underline{10} \\
30 \\
\underline{30} \\
0
\end{array}
$$

14. The correct answer is (C).

Each −1 cancels out the +1 before it.

Because the final term is +1, which is not canceled out by a −1, the sum is +1.

15. The correct answer is (A).

5 hours 30 minutes = $5\frac{1}{2}$ hours

1000 mph ÷ $5\frac{1}{2}$ hours = $1000 \div \frac{11}{2} =$

$1000 \times \frac{2}{11} = 181\frac{9}{11}$ mph

16. The correct answer is (C).

2975 pennies = \$29.75

\$35.00 − \$29.75 = \$5.25 amount of discount

$$\text{Rate of discount} = \frac{5.25}{35} \times 100$$
$$= 0.15 \times 100$$
$$= 15\%$$

17. The correct answer is (C). First convert all the yards and feet into inches so that all addition and subtraction can be done using the same units.

$$
\begin{aligned}
12 \text{ feet} &= 144 \text{ inches} \\
-7 \text{ inches} &= -7 \text{ inches} \\
+2 \text{ feet, } 1 \text{ inch} &= +25 \text{ inches} \\
-7 \text{ feet} &= -84 \text{ inches} \\
-1 \text{ yard} &= -36 \text{ inches} \\
+2 \text{ yards, } 1 \text{ foot,} & \\
3 \text{ inches} &= \underline{+87 \text{ inches}} \\
&= 129 \text{ inches}
\end{aligned}
$$

18. The correct answer is (C). Any number multiplied by 0 equals 0. Since one multiplier on one side of the equals sign is 0, the product on that side of the sign must be 0. The value on the other side of the equals sign must also be 0.

$5x = 5 \times 4 \times 2 \times 0$

$5x = 40 \times 0$

$5x = 0$

$x = 0$

19. The correct answer is (B).

Area of a square = s^2

$49 = 7^2$

One side = 7 inches

$P = 4s$

P = 4 × 7" = 28 inches

20. The correct answer is (C). First perform the operation within the parentheses. To cube a number, multiply it by itself, two times.

$(3 + 4)^3 = (7)^3 = 7 \times 7 \times 7 = 343$

21. The correct answer is (A).

First room:
36 ft. × 8 ft. = 288 sq. ft.

Second room:
24 ft × 9 ft. = 216 sq. ft.

504 sq. ft.

504 ÷ 224 = 2.25 rolls needed

22. The correct answer is (A).

0.05% of the total (x) = 60

$0.0005x = 60$

$x = 60 \div 0.0005 = 120{,}000$

23. The correct answer is (D). If the court does a day's work every day, it will dispense with 60 days' worth of new cases. The excess work is 0.6 × 60 = 36 days of work. Add the 36 newly accumulated hours of excess work to the backlog of 150 days of work to learn that the court will be 186 trial days behind.

24. The correct answer is (B). $\frac{1}{4}$ in. = 1 ft., so 1 in. = 4 ft. and the living room is 7 × 4 = 28 ft. long. When the scale is changed to 1 in. = 1 ft., the 28-ft. living room will be 28 in. on the new drawing.

25. The correct answer is (D). To find percent of change, subtract the original figure from the new figure to determine amount of change; then divide the amount of change by the original figure to determine percent of change.

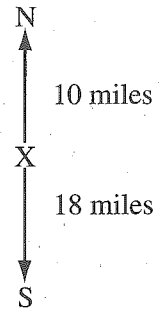
$\$65 - \$50 = \$15 \div 50 = 0.3 = 30\%$

26. The correct answer is (C). $11\frac{1}{2}\%$ of $5000 is $575. Because he repaid the loan in one-half of a year, his interest payment is $575 ÷ 2 = $287.50.

27. The correct answer is (C). If 30% has been deducted, $35 is 70% of the original price. To find out what a number is when a percent of it is given, rename the percent as a decimal and divide the given number by it.

$\$35 \div 0.70 = \$50$

28. The correct answer is (C). One car went 20 mph for $\frac{1}{2}$ hour = 10 miles. The other went 36 mph for $\frac{1}{2}$ hour = 18 miles. Because they went in opposite directions, add the two distances to find the total number of miles apart: 10 + 18 = 28.



29. The correct answer is (A). The boy worked 45 days × $14.50 per day, so he earned $652.50. He saved 60% of $652.50 = $391.50.

30. The correct answer is (D). Rename 8 in. as $\frac{2}{3}$ ft. so that all measurements are in the same unit. Then multiply $l \times w \times h$.

3 ft. × $\frac{2}{3}$ ft. × 1 ft. = 2 cu. ft.

31. The correct answer is (C). 4 in. = 32 miles; therefore, 1 in. = 32 ÷ 4 = 8 miles. 80 miles would be represented by 10 in.

32. The correct answer is (A). You do not need to do complicated calculations to answer this question: 14 − 6 = 8. The sun was above the horizon for 8 minutes less than 12 hours, which is 11 hours 52 minutes (60 − 8 = 52).

33. The correct answer is (A).

25 ft. 8 in. = 24 ft. 20 in.

$$18 \text{ ft. } 10 \text{ in.} = \frac{18 \text{ ft. } 10 \text{ in.}}{6 \text{ ft. } 10 \text{ in.}}$$

34. The correct answer is (C). No calculations are needed here. Note that a 20-mile trip at 60 mph (which is 1 mile per minute) would take 20 minutes. Because the vehicle is traveling half as fast (30 mph), the 20-mile trip should take twice as long, or 40 minutes.

35. The correct answer is (B). This is a proportion problem. Set up the proportion as follows:

$$\frac{2\frac{1}{2}}{4} = \frac{1\frac{7}{8}}{?}$$

Substitute x for ?:

$$\frac{2\frac{1}{2}}{4} = \frac{1\frac{7}{8}}{x}$$

Cross-multiply:

$$2\frac{1}{2}x = 4 \times 1\frac{7}{8}$$

$$\frac{5}{2}x = \frac{60}{8}$$

Divide both sides by the coefficient of x and calculate:

$$x = \frac{60}{8} \div \frac{5}{2}$$

$$x = \frac{60}{8} \times \frac{2}{5}$$

$$x = 3$$

36. The correct answer is (D). A child's ticket costs x dollars. Each adult ticket costs twice as much, or $2x$ dollars. $2(2x) = 2$ adult tickets; $3x = 3$ children tickets. Write a simple equation and solve for x.

$$2(2x) + 3x = \$49$$

$$4x + 3x = \$49$$

$$7x = \$49$$

$$x = \$7$$

\$7 is the cost of a child's ticket; \$14 is the cost of an adult's ticket.

37. The correct answer is (B).

$1\frac{1}{2}$ c. sugar $\times$ 8 = 12 c. sugar

12 c. $\div$ 2 c. per lb. = 6 lb. of sugar

38. The correct answer is (C). By substituting +2 for the triangle, the denominator of the fraction becomes zero. A denominator of zero is undefined in mathematics.

39. The correct answer is (B). The first pipe can fill the tank in $1\frac{1}{2}$ hours, or $\frac{3}{2}$ hours; that is, it can do $\frac{2}{3}$ of the job in 1 hour. The second pipe can fill the tank in 45 minutes, or $\frac{3}{4}$ of an hour, or it can do $\frac{4}{3}$ of the job in 1 hour. Together the pipes can complete $\frac{4}{3} + \frac{2}{3} = \frac{6}{3}$ of the job in 1 hour. $\frac{6}{3} = 2$, or twice the job in 1 hour. Therefore, together the two pipes could fill the tank in $\frac{1}{2}$ hour.

40. The correct answer is (D). The cars are traveling toward each other, so the distance between them is being reduced at 60 + 50 or 110 miles per hour. At a rate of 110 mph, 550 miles will be covered in 5 hours. If both cars left at 1:00 p.m., they should meet at 6:00 p.m.