

Answer Key

- $8 = 1 \times 8 = 2 \times 4$
So, the factors are {1, 2, 4, 8}
- $20 = 1 \times 20 = 2 \times 10 = 4 \times 5$
{1, 2, 4, 5, 10, and 20} are the factors.
- $25 = 1 \times 25 = 5 \times 5$
{1, 5, 25} are the factors.
- $40 = 1 \times 40 = 2 \times 20 = 4 \times 10 = 5 \times 8$
{1, 2, 4, 5, 8, 10, 20, and 40} are the factors.
- $60 = 1 \times 60 = 2 \times 30 = 3 \times 20 = 4 \times 15 = 5 \times 12 = 6 \times 10$
{1, 2, 3, 4, 5, 6, 10, 12, 15, 30, 60} are the factors.
- $\frac{1}{3} \times (3+6) = \frac{1}{3} \times (9) = 3$
- 4
- 5
- 2
- 6
- 3
- 13
- $3 \times (4 + 3 + 1) \div (2) = 3 \times (8) \div (2) = 6$
- $1.2 \times \square = 60$
 $\square = 50$
- $2 \times (3 + \square) = 2 \times 3 + 12$
 $2 \times \square = 12$
 $\square = 6$
- $\Delta = 1$
- $\square = 9$
- $\square = 6$
- $\square = 4$
- $\square = 8$
- $\frac{2}{7} = \frac{4}{14} = \frac{10}{35}$
- $\frac{3}{3} = \frac{4}{4} = \frac{10}{10}$
- $\frac{7}{3} = \frac{14}{6} = \frac{63}{27}$
- $\frac{5}{3} = \frac{15}{9} = \frac{45}{27}$
- $\frac{6}{3} = \frac{4}{2} = \frac{28}{14}$
- $\frac{2}{5} = \frac{4}{10} = \frac{40}{100}$
- $\frac{8}{10} = \frac{8}{10} = \frac{4}{5}$
- $\frac{2}{3} = \frac{16}{24} = \frac{24}{36}$
- $\frac{20}{100} = \frac{1}{5} = \frac{10}{50}$
- $2 = \frac{4}{2} = \frac{24}{12}$
- $4 = \frac{12}{3} = \frac{24}{6}$
- $\frac{15}{5} = \frac{24}{8} = \frac{75}{25}$
- $1 = \frac{6}{6}$
- $2 = 1 \frac{5}{5}$
- $6 = 5 \frac{3}{3}$
- $3 = 2 \frac{15}{15}$
- $\frac{20}{3} = 6 \frac{2}{3}$
- $3 \frac{2}{3} = \frac{11}{3}$
- $3 \frac{2}{3} = 2 \frac{5}{3}$
- $12 \frac{1}{11} = 11 \frac{12}{11}$
- $120 \div 2 = 60$ (half-perimeter)
 $60 - 20 = 40$ (length)
 $40 \times 20 = 800 \text{ in}^2$
- $40 \times 0.30 = \$12$
- $40 \div 8 = 5$ (cartons)
- $5 \times 2 = \$10$
- $200 \div 10 = 20$ (length)
perimeter = $2(10 + 20) = 60$ in
- $3 \times 21 = 63$
 $2 \times 21 = 42$
The greatest common factor of 63 and 42 is 21.
- $2 \frac{3}{4} + 1 \frac{2}{3} = 3 \frac{3}{4} + \frac{2}{3} = 3 \frac{9+8}{12} = 4 \frac{5}{12}$ dozen
 $4 \frac{5}{12} \times 12 = 48 + 5 = \boxed{53}$
- $(180 - 10) \div 2 = 85$ (Wilson)
 $180 - 85 = 95$ (Larry)
- $3 + 6 + 3 \times 2 + 2 \times 4 = 23$
waffles
- $3 \times 5 = 15$ choices
- $\frac{1}{3}(36) = 12$
 $\frac{1}{4}(36 + 12) = 12$
 $\frac{1}{6}(36 + 12) = 8$
 $12 - 8 = \boxed{4}$ (loss)
- $124 - 16 = 108$
 $108 + 124 = \boxed{232}$ sec
- $2 \times 5 = 10$ arrows
- $3 \times 4 = 12$ arrows
- Ben is faster
- In each hour Ann can build 10 arrows and Ben can build 12 arrows. They can build 22 arrows in an hour, and 44 arrows in two hours.
- $6 \div 1 \frac{1}{2} = 6 \div 1.5 = 4$
 $70 \times 4 = \boxed{280}$ marbles
- $\frac{3}{8} + \frac{1}{4} + \frac{1}{8} = \frac{1}{2} + \frac{1}{4} = \frac{3}{4}$
 $1 - \frac{3}{4} = \frac{1}{4}$
- $4:00 \text{ pm} - 10:00 \text{ am} = 6 \text{ hr}$
 $6 \text{ hr} - 1 \text{ hr} = 5 \text{ hr}$
 $5 \times 50 = \boxed{250}$ (miles)
- $24 \times 5 = 120$ (people)
- $(26 + 32 + 71 + 87 + 90 + 18) / 6 = 54$
- $\square = 8$
- 74529
- $31 \times 24 \times 60 = 44640$ min
- $26 + 11 = 37$
or
 $6^2 + 1 = 37$
- $24 + 11 = 35$
or
 $6^2 - 1 = 35$
- $2(12 + 4) = \boxed{32}$ inches (perimeter)
 $2 \times 12 + 2 \times 2 = \boxed{28}$ sq. in. (area)
- $15 \frac{2}{5} \times 5 = 75 + 2 = 77$ inches
- 2 and 29
- $12 \times (5.2 + 4.8) = 120$
- 27
- 4
- (a) $5 \times 4 \div 2 = 10$ different edges
These edges are
AB, AC, AD, AE,
BC, BD, BE,
CD, CE,
and DE.

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(b) 10 different triangles
 These triangles are
 ABC, ABD, ABE, ACD,
 ACE, ADE
 BCD, BCE, BDE
 and CDE.

74. $\frac{1}{8}$

75. $60 \div 12 = 5$
 $5 \times 45 = 225$ ounces

76. $\frac{4}{6} = \frac{2}{3}$
 $\frac{2}{3} \times 27 = 18$

77. $50 - 10 = 40$

$40 \times 40 = 1600$ in²

78. There are more than one way.

$\frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{3} + \frac{1}{3} = 1$

or

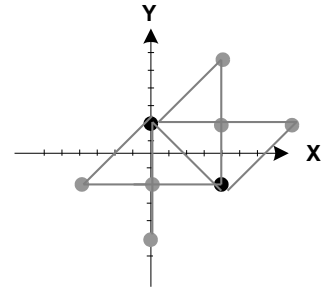
$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{8} + \frac{1}{8} = 1$

79. $30,000 - 20,000 = 10,000$

$5000 - 3000 = 2000$

$10,000 \div 2000 = 5$ (years)

80. Any one of (4, 2), (4, 6), (8, 2), (0,-6), (0, -2), and (-4,-2).



Answer Key

1. $50=1 \times 50$
 $=2 \times 25$
 $=5 \times 10$
 {1, 2, 5, 10, 25, and 50} are the factors.

2. $60=1 \times 60$
 $=2 \times 30$
 $=3 \times 20$
 $=4 \times 15$
 $=5 \times 12$
 $=6 \times 10$
 {1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, and 60} are the factors

3. $100=1 \times 100$
 $=2 \times 50$
 $=4 \times 25$
 $=5 \times 20$
 $=10 \times 10$
 {1, 2, 4, 5, 10, 20, 25, 50, and 100} are the factors.

Speedy Computation

4. $16 = 1 \times 16 = 2 \times 8 = 4 \times 4$.
 Thus, the factors are {1, 2, 4, 8, 16}.
5. $20 = 1 \times 20 = 2 \times 10 = 4 \times 5$.
 Thus, the factors are {1, 2, 4, 5, 10, 20}.
6. 33
7. $79 - 13 \times 6 = 1$
8. 24 R 3
9. 6 R 1

10. 0
11. 999
12. 18 has factors: {1, 2, 3, 6, 9, 18}.
- 24 has factors : {1, 2, 3, 4, 6, 12, 24}.
- Therefore, the largest common factor of 18 and 24 is 6.

Alternative method:
 Use common division as below. Both 2 and 3 are circled since they are common factors.

step 1.	step 2.
$2 \overline{) 18, 24}$ 9, 12	$2 \overline{) 18, 24}$ $3 \overline{) 9, 12}$ 3, 4

Therefore, the largest common factor is $2 \times 3 = 6$.
 The above alternative method is recommended for tons of reasons.

13. 120 has {1, 2, 3, 4, 5, 6, 8, 10, 12, 15, 20, 24, 30, 40, 60, 120} 96 has {1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 96}

Alternative method:

$6 \overline{) 120, 96}$ 20, 16	$6 \overline{) 120, 96}$ $4 \overline{) 40, 16}$ 5, 4
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Therefore, $6 \times 4 = 24$ is the GCD

14. 7
15. 12
16. 12
17. 9
18. 4
19. $2 \times (3 + 6) \div 3 = 2 \times (9) \div 3 = 2 \times 9 \div 3 = 6$
20. 6.3
21. $\frac{3}{5} = \frac{12}{20} < \frac{15}{20} = \frac{3}{4}$
22. $\frac{4}{6} = \frac{16}{24} > \frac{15}{24} = \frac{5}{8}$
23. $\frac{2}{5} = \frac{14}{35} < \frac{15}{35} = \frac{3}{7}$
24. $\frac{4}{5} = \frac{12}{15} > \frac{10}{15} = \frac{2}{3}$
25. $\frac{3}{12} = \frac{6}{24} < \frac{15}{24} = \frac{5}{8}$
26. $\frac{6}{15} < \frac{10}{15} = \frac{2}{3}$
27. $\frac{3}{12} = \frac{4}{16}$ since $3 \times 16 = 48 = 4 \times 12$. $\frac{3}{12} \neq \frac{4}{15}$ since $3 \times 15 = 45 \neq 48 = 12 \times 4$
28. $\frac{4}{36} > \frac{3}{36}$
29. $\frac{2}{7} = \frac{4}{14} < \frac{5}{14} = \frac{5}{14}$

30. $\frac{7}{10} = \frac{21}{30} < \frac{22}{30} = \frac{11}{15}$
31. $\frac{7}{12} = \frac{21}{36} > \frac{10}{36} = \frac{5}{18}$
32. $\frac{5}{9} = \frac{20}{36} < \frac{21}{36} = \frac{7}{12}$
33. $\frac{7}{18} = \frac{14}{36} < \frac{15}{36} = \frac{5}{12}$
34. $\frac{5}{9} = \frac{35}{63} < \frac{39}{63} = \frac{13}{21}$
35. $\frac{5}{8} = \frac{35}{56} < \frac{36}{56} = \frac{9}{14}$
36. $\frac{5}{16} = \frac{30}{96} > \frac{28}{96} = \frac{7}{24}$
37. $\frac{4}{15} = \frac{20}{75} < \frac{21}{75} = \frac{7}{25}$
38. $\frac{13}{24} = \frac{65}{120} < \frac{66}{120} = \frac{11}{20}$
39. $\frac{7}{15} = \frac{28}{60} > \frac{27}{60} = \frac{9}{20}$
40. $\frac{7}{30} = \frac{49}{210} < \frac{54}{210} = \frac{9}{35}$

41. $5 + 7 = 12$
42. $(5+3) + (7+3) = 12 + 6 = 18$
43. $(5 - 3) + (7 - 3) = 12 - 6 = 6$
44. $7 - 5 = 2$
45. $(7 + 3) - (5 + 3) = 7 - 5 = 2$
46. $(7 - 3) - (5 - 3) = 7 - 5 = 2$
47. $192 \div 12 = 16$ inches
48. See the following table.

Bush	pay
1 st	0.01
2 nd	0.02
3 rd	0.04
4 th	0.08
5 th	0.16
6 th	0.32
7 th	0.64
8 th	1.28
9 th	2.56
10 th	5.12 ← answer

49. 10.23
50. $8:45 + 8:45 = 17:30 = 5:30$ pm
51. Brant washed 6 cars. Kristie washed 6 more, so she washed 12 cars. Gina washed 1 less than Kristie, so she washed 11 cars. Nat washed twice as many as Gina, so he washed 22 cars. Start with the number of cars Brant washed and work backwards.

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- B: 6
K: 12
G: 11
N: 22 cars
52. $2,000 \div 4 = 500$
53. $4 \times 500 = 2,000$ packages
54. Friday
55. Thursday and Friday
56. $1 + 3 + 2 + 4 + 7 + 1 = 18$
 $18 \div 6 = 3$
 $3 \times 500 = 1,500$
57. $4 + 5 = 9$
 $9 \times 500 = 4,500$
58. $8 \times 500 = 4,000$
 $4,000 \div 1000 = 4$
59. $150 \times 3 = 450$ (pounds)
60. $20 \times 24 \times 12 = 5760$ (eggs)
61. $11^3 = 1331$
 $1 + 3 + 3 + 1 = 8$
To be divisible by 9 (and 2 why?), the sum of the digits can be 18, 36, or etc.
The only possible sum is 18.
The 6-digit number reads as 513315.
62. $180 \div 9 = 20$
 $20 = 4 \times 5$

- length = 5 inches
width = 4 inches
63. 15 minutes
64. $10 \times 3 + 1 = 31$ matches
65. $4 \times 4 \times 2 = 32$ ($\frac{1}{2}$ -cup)
66. $15 \times 60 = 900$
 $900 \div 18 = 50$ messages
67. $5 \div 2 = 2R1$
 $6 \div 2 = 3$
 $7 \div 2 = 3R1$
 $2 \times 3 \times 3 = 18$
68. There are a couple of ways:
 $9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 99$
 $9 + 8 + 7 + 6 + 5 + 4 + 3 + 2 + 1 = 99$
69. 35
70. $3 \times 6 \div 2 = 9$ diagonals
71. There are 6 numbers from the smallest to the largest:
1199, 1919, 1991, 9119, 9191, and 9911.
72. $7 \times 5 = 35$
73. $8^2 = 64$
74. (1) $1 \times 2 = 2$
(2) $2 \times 3 = 6$
(3) $3 \times 4 = 12$

- ...
- (7) $7 \times 8 = 56$ dots
75. $2 \times 3 = 6$
 $2 \times 6 = 54$
 $16 \times 6 = 96$
 $16 - 9 + 1 = 8$
76. $2 \times 4 \times 32 = 256$ ounces
77. 5 parallelograms (size 1)
4 parallelograms (size 2)
3 parallelograms (size 3)
2 parallelograms (size 4)
1 parallelogram (size 5)
 $5 + 4 + 3 + 2 + 1 = 15$ parallelograms
78. $9 + 4 + 1 + 12 + 4 = 30$

Shape	Number
□	9
□	4
□	1
◇	12
◇	4

79. There are 38 triangles.
80. 9 triangles with side = 1
3 triangles with side = 2
1 triangle with side = 3
 $9 + 3 + 1 = 13$ triangles in total

Answer Key

1. 21
2. 84
3. 12
4. 1
5. 71
6. 67
7. 30
8. 20
9. 11
10. 9
11. 7
12. 11
13. 9

14. $8 = 2 \times 2 \times 2 = 2^3$ Note that $2^3 \neq 6$
15. $9 = 3 \times 3 = 3^2$ Note that $3^2 \neq 6$
16. $27 = 3 \times 3 \times 3 = 3^3$
17. $\frac{3}{4}$
18. $\frac{1}{4}$
19. 0.005
20. 75%

21. $\frac{5}{6} = \frac{25}{30} > \frac{24}{30} = \frac{4}{5}$

22. $\frac{8}{15} < \frac{10}{15} = \frac{2}{3}$

23. $\frac{3}{12} = \frac{6}{24} < \frac{15}{24} = \frac{5}{8}$

24. $\frac{2}{5} = \frac{6}{15} < \frac{10}{15} = \frac{2}{3}$

25. $\frac{3}{4} \xrightarrow{\times 5} \frac{15}{20}$
 $\frac{7}{10} \xrightarrow{\times 2} \frac{14}{20}$, so $\frac{3}{4}$ is larger.

26. $\frac{1}{4} \xrightarrow{\times 3} \frac{3}{12}$

$\frac{2}{6} \xrightarrow{\times 2} \frac{4}{12}$

27. $\frac{5}{12} \xrightarrow{\times 2} \frac{10}{24}$

$\frac{7}{24} \xrightarrow{\times 1} \frac{7}{24}$

28. $\frac{13}{24} \xrightarrow{\times 3} \frac{39}{72}$

$\frac{15}{36} \xrightarrow{\times 2} \frac{30}{72}$

29. $\frac{11}{40} \xrightarrow{\times 3} \frac{33}{120}$

$\frac{23}{60} \xrightarrow{\times 2} \frac{46}{120}$

30. $\frac{5}{16} \xrightarrow{\times 3} \frac{15}{48}$

$\frac{7}{24} \xrightarrow{\times 2} \frac{14}{48}$

31. $12 \frac{1}{11} = \frac{133}{11}$

32. $18 \frac{1}{3} = 17 \frac{20}{15}$

33. $6 \frac{1}{3} = 5 \frac{16}{12}$

34. $5 \frac{1}{3} = \frac{16}{12}$

35. $10 = \frac{30}{3}$

36. $\frac{11}{40} \xrightarrow{\times 3} \frac{33}{120}$

$\frac{13}{60} \xrightarrow{\times 2} \frac{26}{120}$

37. $\frac{7}{48} \xrightarrow{\times 3} \frac{21}{144}$

$\frac{11}{72} \xrightarrow{\times 2} \frac{22}{144}$

38. $\frac{13}{60} \xrightarrow{\times 4} \frac{52}{240}$

$\frac{23}{80} \xrightarrow{\times 3} \frac{69}{240}$

39. A

40. C

41. $23.75 \times 5 = 118.75$
 6 bills of 20 = $6 \times 20 = 120$
 $120 - 118.75 = \$1.25$ for change

42. $12:00 - 8:45 = 3:15$
 $3:15 + 6:45 = 10:00 = 10$ hr

43. $120 - 2 \times 20 = \$80$

44. $220 - 30 = 190$
 $190 \div 2 = \$95$

45. $255 - 90 \times 2 = 75$
 $75 \div 3 = \$25$

46. $5 \times 2\frac{1}{2} = 12\frac{1}{2}$ mi

47. $4 \times 12 \div 3 = 16$

48. 64 ounces = 2 quarts
 $2 \times 15 = 30$ quarts

49. $200 \div 5 = 40$

50. $30 + 60 + 90 + 120 = 300$ (sec)

$0.25 \times 4 = \$1$

51. $21 \div 0.3 = 70$

52. $5 + 3 + 2 = 10$
 $10 \times 5 = 50$ (total)
 $50 \div 4 = \$12.50$ (each friend)

53. $4 \times 5 = 20$ songs

54. $8 + 5 + 2 = 15$

$$\begin{array}{r} 826 \\ + 695 \\ \hline 1521 \end{array}$$

55. $6 + 5 + 1 = 12$

$$\begin{array}{r} 536 \\ - 355 \\ \hline 181 \end{array}$$

56. $4 \times 4 = \boxed{16}$

57. Method I)
 The outcomes just opposite to what he wants are:

Shirt	Pant	
Blue	blue	1
Red	None	0
White	white, black, brown	1
Black	black	1
Total =		3

The probability of desired outcome is

$1 - \frac{3}{16} = \frac{13}{16}$

There is nothing to do with the choices of socks. So, don't care about it.

Method II)

The desired outcomes are:

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Shirt	Pants	
		62. $24 \div 6 = 4$, $4 \times 1.2 = 4.8$
Blue	black, brown, and white	3 $24 \div 12 = 2$, $2 \times 1.8 = 3.6$ $48 - 3.6 = \$1.20$
Red	blue, black, brown, and white	4 $36 \div 12 = 3$, $3 \times 1.79 = 5.37$ 3 $36 \div 6 = 6$, $6 \times 1.19 = 7.14$
White	blue, black, brown	3 $714 - 5.37 = \$1.77$ (Saving)
Black	blue, brown, and white	6 42×83
Total		5 $15 + 3.5 + 5 = 10$ 3 $10 \times 6.5 = \$65$

The probability is $\frac{13}{16}$.

58. $3 + 5 = 8$

$8 \div 2 = 4$

59. $7 + 9 = 16$

$16 \div 2 = 8$

60. $(30 + 50 + 64) \div 3$

$= 144 \div 3$

$= 48$ pounds

61. $4 + 1 = 5$

$5 \times 2 = 10$

66. $16 \div 2 = 8$

$3 \times 8 = 24$

$5 \times 2 = 10$

$24 + 10 = 34$

There are 5 mermaids and 3 octopus.

67. 1 gal = 128 ounces

$128 \times (\frac{1}{4} \times 12) = 384$

$384 - 31 = 353$

68. 5

69. 4

70. 7

71. 144

72. 0

73. 5

$\frac{5}{14} = 0.357$

74. $5 + 3 = 8$

$5 - 2 = 3$

$8 \times 3 = 24$

The length of each side of the square is 5 cm.

75. $2(3 + 8) = 22$ cm

76. $345 \div 15 = 23$ (miles per gal)

$460 \div 23 = 20$ gal

77. 5,184

78. $\frac{3}{5} \times 50 = 30$

79. $1 + 3 = 4$

$24 \times \frac{1}{4} = 6$ (girls)

$24 \times \frac{3}{4} = 18$ (boys)

$18 - 2 = 16$

$6:16 = 3:8$

80. $1.3 \div 13 \times 12 = 1.2$ ounces

Answer Key

1.
$$\begin{array}{r} 2 \overline{) 100} \\ \underline{20} \\ 5 \overline{) 25} \\ \underline{5} \end{array}$$

 $100 = 2 \times 2 \times 5 \times 5 = 2^2 \times 5^2$
2.
$$\begin{array}{r} 2 \overline{) 120} \\ \underline{20} \\ 2 \overline{) 30} \\ \underline{20} \\ 3 \overline{) 15} \\ \underline{15} \end{array}$$

 $120 = 2 \times 2 \times 2 \times 3 \times 5 = 2^3 \times 3 \times 5$
3. $375 = 3 \times 5 \times 5 \times 5 = 3 \times 5^3$
4. $24 = 2^3 \times 3$
5. $32 = 2^5$
6. $36 = 2^2 \times 3^2$
7. $48 = 2^4 \times 3$
8. $75 = 5^2 \times 3$
9. $40 = 1 \times 40 = 2 \times 20 = 4 \times 10 = 5 \times 8$. Thus, the factors are {1, 2, 4, 5, 8, 10, 20, 40}.
10. $25 = 1 \times 25 = 5 \times 5$. Thus, the factors are {1, 5, 25}.
11. $35 = 1 \times 35 = 5 \times 7$. Thus, the factors are {1, 5, 7, 35}.
12. $50 = 1 \times 50 = 2 \times 25 = 5 \times 10$. Thus, the factors are {1, 2, 5, 10, 25, 50}.
13. $60 = 1 \times 60 = 2 \times 30 = 3 \times 20 = 4 \times 15 = 5 \times 12 = 6 \times 10$. Thus, the factors are {1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60}.
14. 30
15. 16
16. 12
17. 4
18. 25
19. $\frac{1}{2}$
20. \div
21. $\frac{39}{78} = \frac{1}{2}$

22. $\frac{160}{960} = \frac{1}{6}$
23. $\frac{160}{96} = \frac{5}{3}$
24. $\frac{6}{8} = \frac{3}{4}$
25. $\frac{12}{16} = \frac{3}{4}$
26. $\frac{64}{144} = \frac{4}{9}$
27. $\frac{50}{75} = \frac{2}{3}$
28. $\frac{192}{640} = \frac{12}{40} = \frac{3}{10}$
29. $\frac{250}{625} = \frac{2}{5}$
30.
$$\begin{array}{ccc} \frac{90}{150} & \xrightarrow{\div 10} & \frac{9}{15} \\ & & \xrightarrow{\div 3} & \frac{3}{5} \end{array}$$
31. $\frac{40}{60} = \frac{2}{3}$
32. $\frac{33}{77} = \frac{3}{7}$
33. C
34. C
35. B
36. B
37. C
38. A
39. B
40. A
41. $4.5 \times 220 = 4.5 \times 2 \times 110 = 9 \times 110 = \boxed{\$990}$
42. $\frac{1}{4} + \frac{1}{2} + \frac{3}{4} = 1\frac{1}{2}$ (pounds)
43. $2(1:45) = 2:90 = 3:30$
 $9:35 + 3:30 = 13:05 = \boxed{1:05 \text{ pm}}$
44. $4:55 \text{ am} + 1:17 = 6:12 \text{ pm}$
45. $8:20 \text{ am} + 2:50 = 11:10 \text{ am}$
46. $8:25 \text{ pm} - 4:30 = 3:55 \text{ pm}$
47. $5:30 \text{ pm} - 8:40 \text{ am}$
 $= 17:30 - 8:40$
 $= 8:50$
 $= \boxed{8 \text{ hr } 50 \text{ min}}$
48. $174 \div 3 = 58$ marbles
49. $3 + 1 = 4$
 $12 \div 4 = 3$ apples
50. $10 - 6 = 4$

51. $5 \times 0.5 + 5 \times 0.1$
 $= 0.25 + 0.5$
 $= \$0.75$

Dimes	Nickels	Total
10		\$1.00
9	1	\$0.95
8	2	\$0.90
7	3	\$0.85
6	4	\$0.80 ✓

- 52.
53. Method I)
 Guess and check So, he must used 6 dimes and 4 nickels.
 Method II)
 If he used 10 dimes, then total value would become 100, a surplus of 20¢. Since each dime is 5¢ more than a nickel, so an exchange of a dime with a nickel will reduce the value by 5¢. Therefore, 4 exchanges are needed to reduce 20¢.
54. $5280 \div 6 = 880$ feet
55. $5 \times 125 = 625\text{¢} = \6.25
56. $60 + 66 + 69 = 195$
 $165 \div 3 = 65$
57. $23 \div 4 = 5R3$
 $5 + 1 = 6$ tables
58. $3 \times 6 + 5 = 23$
 three 6's and one 5
59. $23 \div 4 = 5R3$
 (a) $5 + 1 = 6$ (boxes)
 (b) $24 - 23 = 1$ (copy)
60. $40 \div 9 = 4R4$
 $4 + 1 = \boxed{5 \text{ cars}}$
61. $5280 \div 6 = 880$ fathoms
62. $1760 \times 3 \div 6 = \boxed{880 \text{ fathoms}}$
63. $a + 2$
64. 20
65. $3 + 1 = 4$
 $24 \times \frac{3}{4} = 18$ (boys)
 $24 \times \frac{1}{4} = 6$ (girls)
 $18 - 2 = 16$ (boys left)
 $16:6 = \boxed{8:3}$
66. 3,000
67. 8 hours
68. Ivy, Filbert, Greta, Hal

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69. It can produce 3 toys in 2 min, so can it produce 90 toys in 1 hour and 180 toys in 2 hours.
70. $8 \times 60 = 480$
 $480 \div 12 = 40$ items
71. $(5 \text{ min } 40 \text{ sec}) \div 2 = 2 \text{ min } 50 \text{ sec}$
 $5 \text{ min } 40 \text{ sec} + 2 \text{ min } 50 \text{ sec}$
 $= 7 \text{ min } 90 \text{ sec}$
 $= 8 \text{ min } 30 \text{ sec}$
72. $9 = 3 \times 3$
73. $8 + 8 + 4 = 20$
 $8 + 4 = 12$ white beads
74. $2^2 = 4$ times
75. B
76. The distance from the Tropic of Cancer to the Equator is about 1,587 miles.
77. \$10,800.00
78. 5 ①
 $= 1 + 4$ ②
 $= 2 + 3$ ③
 $= 1 + 1 + 3$ ④
- $= 1 + 2 + 2$ ⑤
 $= 1 + 1 + 1 + 2$ ⑥
 $= 1 + 1 + 1 + 1 + 1$ ⑦
There are 7 ways.
79. (1) 6 squares
(2) $6 + 3 = 9$ squares
(3) $9 + 3 = 12$ squares
(4) $12 + 3 = 15$ squares
(5) $15 + 3 = 18$ squares
(6) $18 + 3 = 21$ squares
80. $60 \times 5 = 300$
 $300 \div 4 = 75$
 $75 - 60 = 15$ mph faster

Answer Key

1. 5
2. 2.03
3. 4.6
4. 0.13
5. $0.2(24 - 12 + 13) = 0.2(25) = 5$
6. 3.6
7. 17
8. $(\frac{2}{3})^2 = \frac{4}{9}$
9. 24.6
10. $72 = 2^3 \times 3^2$
11. $96 = 2^5 \times 3$
12. $99 = 3^2 \times 11$
13. $108 = 2^2 \times 3^3$
14. $144 = 2^4 \times 3^2$
15. 10
16. 125
17. 280
18. 16
19. 24
20. The GCD of(40 ,60) is 20.
21. $5.5 = 5 \frac{5}{10} \xrightarrow{\text{reduce}} 5 \frac{1}{2}$
22. $1.25 = 1 \frac{25}{100} \xrightarrow{\text{reduce}} 1 \frac{5}{20} \xrightarrow{\text{reduce}} 1 \frac{1}{4}$
23. $\frac{35}{100} = \frac{7}{20}$
24. $0.2 = \frac{1}{5}$
25. $0.7 = \frac{7}{10}$
26. $0.4 = \frac{2}{5}$
27. $0.9 = \frac{9}{10}$
28. $0.5 = \frac{1}{2}$
29. $0.10 = \frac{1}{10}$
30. $\frac{625}{1000} = \frac{5}{8}$
31. $\frac{18}{24} = \frac{3}{4}$
32. $\frac{15}{45} = \frac{1}{3}$
33. $\frac{36}{120} = \frac{3}{10}$
34. $\frac{384}{512} = \frac{48}{64} = \frac{3}{4}$
35. $\frac{48}{60} = \frac{4}{5}$

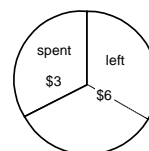
36. $\frac{48}{72} = \frac{2}{3}$
 37. $\frac{36}{48} = \frac{3}{4}$
 38. $\frac{52}{60} = \frac{13}{15}$
 39. $\frac{36}{72} = \frac{1}{2}$
 40. $\frac{32}{48} = \frac{2}{3}$
 41. $63 \div 7 = 9$ colors
 42. 40
 43. 30 dimes
 44. 5 dimes = 2 quarters, 20 dimes = 8 quarters
 45. 7Q and 2D
 46. $3 \times 0.25 + 2 \times 0.10 = 0.95$
 47. He has 2 dimes and 8 nickels.
 48. $\frac{1}{4}$
 49. $16 \times 16 = 256$ gallons
 50. $38 - 31\frac{1}{7} = 7 - \frac{1}{7} = 6\frac{6}{7}$ pounds.
 51. $24 \div 3 = 8$
 52. $60.75 \div 5 = \$12.15$
 53. $30 \div 3 = 10$
 $10 \times 40 = 400$ (words)
 54. $160 \div 40 = 4$
 $4 \times 3 = 12$ min
 55. $4.50 \times 2 + 1.36 \times 4 = 9 + 5.44 = 14.44$ is the total she spent.
 56. $1 + 2 = 3$
 $18 \div 3 = 6$ (Gerald)
 $6 \times 2 = 12$ (Frank)
- Frank

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Gerald

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57. $1 + 2 = 3$
 $18 \div 3 = 6$ (Jon)
 $6 \times 2 = 12$ (Tom)

58. Every group of five marbles, Jon receives 2 and Ken receives 3. There are $30 \div 5 = 6$ groups,
(a) Jon receives $2 \times 6 = 12$ and
(b) Ken receives $3 \times 6 = 18$.
59. $6 \div 2 = \$3$



60. $6 + 3 = \$9$
61. $6 \times \frac{1}{5} = 1.2$ million
 $6 + 1.2 = 7.2$ million
62. $180 - 30 = 150$
 $1 + 4 = 5$
 $150 \div 5 = 30$ ($\angle C$)
 $30 \times 4 = 120$ ($\angle B$)
63. $.2 + .15 + .25 = .6$
 $.6 \times 5 = \$3.00$
64. $1 \times 10 + 2 \times 9 + 3 \times 8 + 4 \times 7 + \dots + 10 \times 1 = 220$
65. 12 cents
66. $(31 \times 2 + 6 \times 3 + 10 \times 1) \div 5 = 18$
67. $2 \times 3 = 6$
 $6 \times 5 = 30$
 $2 + 6 + 30 = 38$ puppies
68. There are 11 ways.

nickels	10	0	6	4	2	0	5	3	1	0	0
dimes	0	1	2	3	4	5	0	1	2	0	0
quarters	0	0	0	0	0	0	1	1	1	2	0
half dollars	0	0	0	0	0	0	0	0	0	1	1
69. 2
70. $(\frac{2}{3})^2 = \frac{4}{9}$
71. The books can be put in this order: Drawing, Designs, Crafts, Paper Cutting, Puppets, Lettering, and Weaving.
72. The least common multiple of 6 and 10 is 30.
 $100 \div 30 = 3$ packages
73. acute

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74. $273 \div 11 = 24R9$
24 gulls

75. $2:17 + 11:59 = 14:16 = 2:16$
A.M.

76. $\frac{7}{14} = \frac{1}{2}$ (hr) = 30 min

$\frac{7}{21} = \frac{1}{3}$ (hr) = 20 min

$30 + 20 = 50$

$60 - 50 = 10$ min

77. $1 + 2 = 3$

$3 + 3 = 6$

$6 + 4 = 10$

$10 + 5 = 15$

Tomorrow he needs jogging
6 miles.

78. $5.95 - 0.35 = 5.60$

$5.60 \div 2 = \$2.80$ (Jamie)

$2.80 + 0.35 = \$3.15$ (James)

79. $4 \times 3 = \$12.00$

80. $1 - 75\% = 25\% = \frac{1}{4}$

$560 \times \frac{1}{4} = 140$

$140 \div 7 = 20$ (pages)