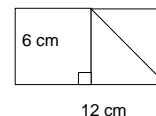
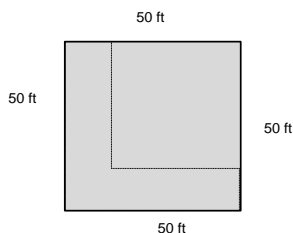


# Answer Key

1. 20
2. 30
3. 7
4. 3
5. 90
6. 4
7. 5
8. 2
9. 6
10. 3
11. 13
12. 7
13. 39
14.  $150 = 1 \times 150 = 2 \times 75 = 3 \times 50 = 5 \times 30 = 6 \times 25 = 10 \times 15$ . Thus, the factors are  $\{1, 2, 3, 5, 6, 10, 15, 25, 30, 50, 75, 150\}$ .
15.  $180 = 1 \times 180 = 2 \times 90 = 3 \times 60 = 4 \times 45 = 5 \times 36 = 6 \times 30 = 9 \times 20 = 10 \times 18 = 12 \times 15$ . Thus, the factors are  $\{1, 2, 3, 4, 5, 6, 9, 10, 12, 15, 18, 20, 30, 36, 45, 60, 90, 180\}$ .
16.  $162 = 1 \times 162 = 2 \times 81 = 3 \times 54 = 6 \times 27 = 9 \times 18$ . Thus, the factors are  $\{1, 2, 3, 6, 9, 18, 27, 54, 81, 162\}$ .
17.  $15 = 1 \times 15 = 3 \times 5$ . Thus, the factors are  $\{1, 3, 5, 15\}$ .
18. It is a prime since  $17 = 1 \times 17$ . Thus, the factors are  $\{1, 17\}$ .
19. 103, 105, 107, 109
20. .25
21.  $\frac{6}{4} = \frac{3}{2}$   
There are  $\boxed{3}$  halves.
22.  $15 \div 3 = 5$  hours
23. 4.5
24.  $17 - 7 - 7 = 3$
25.  $16 + 12 + 9 + 19 = 56$
26.  $126 - 30 = 96$   
 $126 + 96 = \$222$
27.  $2(2 \times 12) + 2(3 \times 12) = 48 + 72 = 120$  books  
 $2(3 \times 12) + 2(4 \times 12) = 72 + 96 = 168$  books  
 $120 + 168 = \boxed{288}$  books  
Yes, they reached their goal.
28.  $180 \div 3 = 60$   
 $60 \div 4 = 15$  cm
29. Nicole, Pan
30. Oscar and Pan
31.  $(52 + 63 + 35) = 150$   
 $150 \div 3 = 50$
32.  $60 \times 2 = 120$   
 $120 - 58 = 62$
33.  $50 \div 6 = 8R2$   
(a) 8 (b) 2
34.  $50 \div 8 = 6 R 2$   
 $6 + 1 = 7$  boxes
35.  $18 \div 4 = 4R2$   
(a) 4 (b) 2
36.  $88 \div 9 = 9R7$   
 $9 + 1 = 10$  rows
37.  $60 \div 2 = 30$   
 $60 \div 3 = 20$   
 $60 - 30 - 20 = \boxed{\$10}$
38. The L-shape needs the same as the square lot.  
The square lot needs  
 $50 \div 2 = 25$   
 $4 \times 25 = 100$   
 $100 - 4 = \boxed{96}$
39.  $0.6 = \frac{6}{10} = \frac{3}{5}$
40.  $0.12 = \frac{12}{100} = \frac{3}{25}$
41.  $0.8 = \frac{4}{5}$
42.  $0.24 = \frac{24}{100} = \frac{6}{25}$
43.  $0.25 = \frac{25}{100} = \frac{1}{4}$
44.  $0.36 = \frac{36}{100} = \frac{9}{25}$
45.  $9.85 = 9\frac{85}{100} = 9\frac{17}{20}$
46.  $2.65 = 2\frac{65}{100} = 2\frac{13}{20}$
47.  $1.2 = 1\frac{1}{5}$
48.  $2.72 = 2\frac{18}{25}$
49.  $3.4 = 3\frac{2}{5}$
50.  $4.9 = 4\frac{9}{10}$
51.  $5.5 = 5\frac{1}{2}$
52.  $6.10 = 6\frac{1}{10}$
53.  $7.65 = 7\frac{13}{20}$
54.  $8.12 = 8\frac{12}{100} = 8\frac{3}{25}$
55.  $9.85 = 9\frac{17}{20}$
56.  $10.24 = 10\frac{24}{100} = 10\frac{6}{25}$
57.  $6\frac{1}{2}$
58.  $7.25 = 7\frac{1}{4}$
59.  $4 \times 2 = 8$   
 $4 + 8 = 12$   
 $\frac{3}{4} \times 12 = 9$   
 $4 + 8 + 9 = 21$
60. Wilson is **26 years old** this year since  
 $26 - 1 = 25 = 5^2$  (last year)  
 $26 + 1 = 27 = 3^3$  (next year)
61. (a)  $2 \times 3 \times 5 \times 4 = \$120$   
(b)  $2 \times 5 = \$10$   
 $10 \div 250 = 0.04 = 4\text{¢}$
62.  $4 - 3 = 1$   
 $1 \div 0.25 = 4$   
 $10 + 4 \times 5 = \boxed{30 \text{ min}}$
63.  $230 \times 10 + 1000 = \$3300$
64.  $6 \times 12 = 72 \text{ cm}^2$



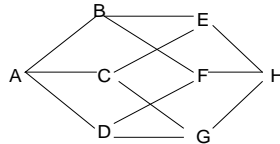
## Dr. Li's GT4 After School Issue 15

67.  $124 = 1 \times 124 = 2 \times 62 = 4 \times 31$   
1, 2, 4, 31, 62, and 124
68. 1, 3, 9, and 27
69. 8 smallest: ABO, BCO, CDO, DEO, EFO, FGO, GHO, HAO  
4 medium: ACO, CEO, EGO, GOA  
4 largest: ACE, CEG, EGA, GAC  
Total = 16 triangles
70. 10 and -6
71. #pears =  $2 \times$  #apples  
 $25 \times 2 = 50$
72.  $54 \div 3 = 18$   
 $18 \times 2 = 36$  pages
73. There are 24 different ways.
74.  $6 \times 3 = 18$  ft  
 $18 \div 1.5 = 12$  bows
75.  $84 = 7$  dozen  
 $7 \times \frac{1}{3} = \frac{7}{3} = 2\frac{1}{3}$  cups
76. \$1.80
77.  $6 \div 2 = 3$   
 $6 + 3 = 9$  pages
78. Michael = 9  
Granny =  $77 + 9 = 86$   
Grandpa =  $86 + 2 = 88$   
Aunt =  $88 \div 4 = 22$  years old
79. black Dodge
80.  $\frac{47}{3}$

# Answer Key

1.  $\frac{1}{2}$
2. 70
3. 12
4. 9
5. 10
6. 8
7. 20
8. 71
9. 75
10. 22
11.  $2 \times (3 + 6) \div 3 = 2 \times (9) \div 3 = 2 \times 9 \div 3 = 6$
12.  $3 \times (4 + 3 + 1) \div (2) = 3 \times (8) \div (2) = 12$
13.  $\frac{1}{3} \times (3 + 6) = \frac{1}{3} \times (9) = 3$
14. 1, 3, 9, 27
15. 6
16.  $30 = 1 \times 30 = 2 \times 15 = 3 \times 10 = 5 \times 6 = 6 \times 5$ . Thus, the factors are {1, 2, 3, 5, 6, 10, 15, 30}.
17.  $39 = 1 \times 39 = 3 \times 13$ . Thus, the factors are {1, 3, 13, 39}.
18.  $48 = 1 \times 48 = 2 \times 24 = 3 \times 16 = 4 \times 12 = 6 \times 8$ . Thus, the factors are {1, 2, 3, 4, 6, 8, 12, 16, 24, 48}.
19. It is a prime since  $29 = 1 \times 29$ . Thus, the factors are {1, 29}.
20.  $32 = 1 \times 32 = 2 \times 16 = 4 \times 8$ . Thus, the factors are {1, 2, 4, 8, 16, 32}.
21.  $6 \times 25 = 150$  miles
22.  $80 \div 10 = 8$
23.  $10 \times 2 = 20$  (cups)
24.  $10 - 2.67 = \$7.33$
25.  $8 \times 5.4 = \$43.20$
26.  $50 \div 2 - 10 = 15$   
 $15 \times 10 = 150$  sq. inches
27.  $1.50 \times 2 = \$3$
28.  $1.5 \times 2 - 1 = \$2$

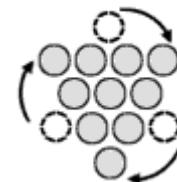
29.  $3 \times 3 = \$9$
30.  $40 \times 3 = 120$  mi
31.  $180 \div 40 = 4.5$  hr = 4 hr 30 min
32.  $81 - 18 = 63$   
 $72 - 27 = 45$   
 **$63 - 36 = 27$**   
 $54 - 45 = 9$   
grandpa = 63 and father = 36
33. Any path would do. For example, ABFH, AEGH, etc. The path has a length of  $30 + 20 + 10 = 60$



34. 6 different paths: ABEH, ABFH, ACEH, ACGH, ADFH, and ADGH.
35. All the same.
36. O = 8  
N = 4  
M = 7  
P = 15
37. Parakeet: 2  
Canary: 4 (= 6 - 2)  
Goldfish: 5 (= 4 + 1)  
Turtle: 1 (= 5 - 4)  
 $2 + 4 + 5 + 1 = 12$  (pets)

38.  $2.40 \div 3 = 0.8$  (an apple)  
 $2 \times 0.8 = 1.60$  (2 apples)  
 $3.70 - 1.60 = 2.10$  (3 oranges)  
 $2.10 \div 3 = \$0.70$  (an orange)
39.  $6 \times 20 = 120$   
 $\frac{5}{8} \times 120 = 75$   
 $\frac{2}{3} \times 75 = 50$  sq. ft.
40.  $50 \div 5 = 10$   
 $50 \div 25 = 2$   
 $10 + 2 = \boxed{12}$
41.  $\frac{30}{4} = 7.5$
42.  $\frac{12}{5} = 2.4$

43.  $\frac{13}{4} = 3.25$
44.  $\frac{31}{8} = 3.875$
45.  $\frac{21}{5} = 4.2$
46.  $\frac{43}{5} = 8.6$
47.  $\frac{103}{5} = 20.6$
48.  $\frac{102}{6} = 17$
49.  $\frac{124}{8} = 15.5$
50.  $5.5 = 5 \frac{5}{10} \xrightarrow{\text{reduce}} 5 \frac{1}{2}$
51.  $1.25 = 1 \frac{25}{100} \xrightarrow{\text{reduce}} 1 \frac{1}{4}$
52.  $2.35 = 2 \frac{35}{100} = 2 \frac{7}{20}$
53.  $3.75 = 3 \frac{3}{4}$
54.  $4.44 = 4 \frac{44}{100} = 4 \frac{11}{25}$
55.  $5.15 = 5 \frac{15}{100} = 5 \frac{3}{20}$
56.  $6.64 = 6 \frac{64}{100} = 6 \frac{16}{25}$
57.  $7.45 = 7 \frac{45}{100} = 7 \frac{9}{20}$
58.  $8.55 = 8 \frac{55}{100} = 8 \frac{11}{20}$
59.  $9.85 = 9 \frac{85}{100} = 9 \frac{17}{20}$
60.  $5 \frac{1}{2}$
61. Three moves are required:



62. (a)  $24 \div 4 = 6$ ,  $6^2 = 36$  square yards  
(b)  $24 \div 2 = 12$ ,  $12 - 3 = 9$ ,  $9 \times 3 = 27$  square yards
63.  $1 + 1 + 2 + 3 + 4 = 11$  (students)  
 $(4 \times 4'9'' + 3 \times 4'10'' + 2 \times 5' + 5'8'' + 5'10'') \div 11 = 48'84'' \div 11$

# Dr. Li's GT4 After School Issue 16

$$= 55 \div 11$$

$$= 5'$$

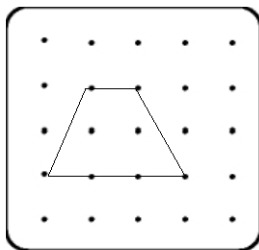
$$= 5 \text{ ft}$$

64.  $6 + 7 = 13$   
 $13 - 11 = 2$
65. 34 students + 1 teacher = 35  
 (total number people)  
 $105 \div 35 = \$3.00$
66.  $2 \times 12000 + 470 = 24,470$
67.  $60 \div 3 = 20$   
 $20 \times 2 = \$40.00$
68.  $3\frac{1}{2} \times 7 = 24\frac{1}{2}$   
 (a) Nancy  
 (b)  $\frac{1}{2}$  more mile
69.  $36 \div 3 = 12$  yrs old (Neal)  
 $12 \times 2 = 24$  yrs old (Nell)

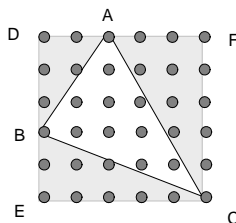
70. There will be  
 $1 + 3 + 9 + 27 + 81 = 121$   
 people notified.

Within	Parents notified
15 min	3
30 min	9
45 min	27
60 min	81

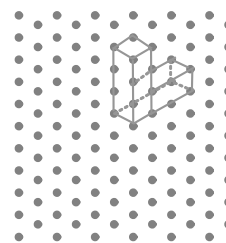
71. See the following diagram.



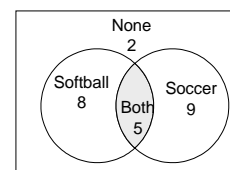
72. The area of the square  
 DECF is  $5 \times 5 = 25$ .  
 The area of  $\triangle ADB = \frac{1}{2}(2 \times 3) = 3$ .  
 The area of  $\triangle BCE = \frac{1}{2}(2 \times 5) = 5$ .  
 The area of  $\triangle ACF = \frac{1}{2}(5 \times 3) = 7.5$ .  
 The area of  $\triangle ABC = 25 - (3 + 5 + 7.5) = 9.5$ .



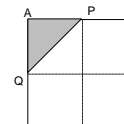
73. Shape should look like below.



74.  $36 + 9 = 45$   
 $36 \div 9 = 4$   
 The larger one is 36.  
 Quick method:  
 $4 + 1 = 5$   
 $45 \div 5 = 9$   
 $45 - 9 = 36$
75.  $14 - 2 = 12$   
 $8 + 9 = 17$   
 $17 - 12 = 5$  (both)



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



77. The smudged score is 3.
78.  $0.84 \div 2 \times 3 = \$1.26$
79.  $0.7 \times \square = 1.40$   
 $\square = \$2.00$

# Answer Key

1. 10
2. 4
3. 9
4. 150
5. 6
6. 70
7. 35
8. 6
9. 12
10. 25
11. 18
12. 160
13. 4
14. 25
15.  $1\frac{1}{4}$
16. 1.2
17. 200
18. 50
19. 32
20. 6
21.  $3.4 + 7.65 = \$11.05$
22.  $4.5 \div 2.25 = 2$
23.  $\frac{4}{7}$
24.  $24 - 12\frac{5}{8} = 11\frac{3}{8}$
25.  $60 \times \frac{1}{4} = 15$  sec  
 $24 \times \frac{1}{4} = 6$  hr  
 $16 \times \frac{1}{4} = 4$  oz  
 $12 \times \frac{1}{4} = 3$  in
26.  $5\frac{1}{2} - 4\frac{3}{4} = \frac{3}{4}$   
 $\frac{3}{4} \times 12 = 9$  inches
27.  $\frac{1}{3}(36) = 12$   
 $\frac{1}{4}(36 + 12) = 12$   
 $\frac{1}{6}(36 + 12) = 8$   
 $12 - 8 = 4$  (loss)
28.  $\frac{6-3}{4-2}$   
 There are 3 halves.
29.  $14 \div 1\frac{3}{4} = 8$  hrs
30.  $1\frac{1}{2} \div \frac{3}{4} = 2$  cups
31.  $6 \times 12.5 = \$75$
32.  $3 \times 2\frac{3}{4} = 8\frac{1}{4}$  mi
33.  $\frac{3}{6} = \frac{1}{2}$
34.  $\frac{1}{2} \times \frac{1}{8} = \frac{1}{16}$

35.  $\frac{1}{3} \times \frac{1}{3} = \frac{1}{9}$
36.  $\frac{2}{3} \times \frac{1}{2} = \frac{1}{3}$
37.  $\frac{2}{3} \times \frac{1}{4} = \frac{1}{6}$
38.  $\frac{1}{2}$
39.  $35\frac{1}{2} + 20 + 15\frac{1}{2} = 71$  lb
40.  $36 \div 2 = 18$  pounds
41.  $4 \overline{)23}$  or  $23 \div 4 = 5.75$   
 So, we have  $\frac{23}{4} = 5.75$
42.  $0.4 = \frac{4}{10} \xrightarrow{\text{reduce}} \frac{2}{5}$
43.  $1\frac{1}{4}$
44.  $\frac{3}{6} = 0.5$
45.  $0.2 = \frac{1}{5}$
46.  $\frac{1}{10} = 0.1$
47.  $0.4 = \frac{2}{5}$
48.  $\frac{3}{4} = 0.75$
49.  $0.5 = \frac{1}{2}$
50.  $\frac{2}{5} = 5 \overline{)2.0} = 0.4$
51.  $\frac{35}{100} = \frac{7}{20}$
52.  $\frac{1}{4} = 0.25$
53.  $0.6 = \frac{6}{10} = \frac{3}{5}$
54. 0.125
55.  $0.8 = \frac{4}{5}$
56.  $\frac{16}{20} = 0.8$
57.  $0.25 = \frac{25}{100} = \frac{1}{4}$
58.  $\frac{6}{30} = 0.2$
59.  $0.75 = \frac{3}{4}$
60.  $2\frac{1}{8}$
61. moose = Pete or Celo  
 gorilla = Pete or Patty  
 zebra = Patty  
 gorilla = Pete  
 moose = Celo  
 crocodile = Gus
62. Charlie 12:55  
 Dave 1:07  
 Brian 1:15

Alex 1:17

63. The table is filled below.

Name	Length of the fish
Timmy	18
Jamie	9
Ricardo	18
George	21

64.  $21 + 18 = 39$  in

65. DCAB

66. See the filled table below.

X means no      O means yes.

	Mercury	Jupiter	Saturn	Neptune
Harry	X	X	O	X
Elliot	X	X	X	O
Saul	O	X	X	X
Nancy	X	O	X	X

67. Harry  $\Rightarrow$  Saturn

Elliot  $\Rightarrow$  Neptune

Saul  $\Rightarrow$  Mercury

Nancy  $\Rightarrow$  Jupiter

68. (7, 8), (21, 22), (23, 24), (37, 38), (57, 58)

5 pages

69. Day 11

See the following table.

Day	Number of Push-ups
1	1
2	4
3	7
4	10
5	13
6	16
7	19
8	22
9	25
10	28
11	31

70. 28 ft high

71. 23 ft high

72. 31 ft high

73. 26 ft high

# Dr. Li's GT4 After School Issue 18

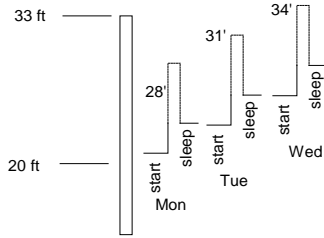
	Day	Night
Mon	28	23
Tue	31	26
Wed	33	28

74.

Note: Thu is only logical, not feasible as the tree is only 33 feet tall.

75. Wednesday

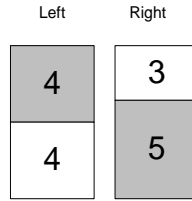
See the following diagram.



76.  $3 + 5 = 8$

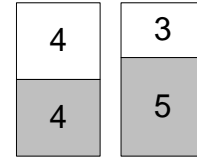
77. 3 bats at most (3 bats with working right eyes).

78.  $7 = 3$  (right eyes) +



79. a) at least one bat is blind  
b) at most 4 bats are blind

Left Right



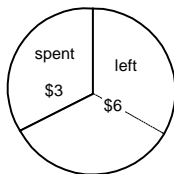
80. 4 sons and 3 daughters

Son	Daughter	$\frac{\#son}{\#daughter}$ in the eye of a daughter
3	2	$3 \div (2 - 1) = 3$
4	3	$4 \div (3 - 1) = 2$

# Answer Key

- $56=1\times 56=2\times 28=4\times 14=7\times 8=8\times 7$ . Thus, the factors are  $\{1, 2, 4, 7, 8, 14, 28, 56\}$ .
- $64=1\times 64=2\times 32=4\times 16=8\times 8$ . Thus, the factors are  $\{1, 2, 4, 8, 16, 32, 64\}$ .
- $60=1\times 60=2\times 30=3\times 20=4\times 15=5\times 12=6\times 10$ . Thus, the factors are  $\{1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60\}$ .
- $81=1\times 81=3\times 27=9\times 9$ . Thus, the factors are  $\{1, 3, 9, 27, 81\}$ .
- It is a prime since  $83=1\times 83$ . Thus, the factors are  $\{1, 83\}$ .
- $92=1\times 92=2\times 46=4\times 23$ . Thus, the factors are  $\{1, 2, 4, 23, 46, 92\}$ .
- 10
- 10
- 50
- 4
- 24
- 11
- 16
- 360
- 33
- 12
- 12
- 9
- 19
- 89,350
- $30\div 3=10$   
 $30-10=\$20$
- 75
- $\frac{3}{6}=\frac{1}{2}$
- $4\frac{3}{8}, 4\frac{3}{4}$
- $0.6, \frac{8}{15}, \frac{5}{9}$
- $50\times \frac{1}{20}=\$2.50$
- $\frac{8}{50}, \frac{10}{37}$
- $180\times \frac{4}{5}=144$

- $6\div 2=\$3$  (spent)  
 $6+3=\$9$  (had)



- $20\div \frac{1}{2}=40$
- $1-\frac{1}{3}=\frac{2}{3}$   
 $24\times \frac{2}{3}=\underline{16}$
- 1st:  $\frac{1}{2}=0.5$   
2nd:  $\frac{3}{8}=0.375$   
3rd:  $\frac{4}{5}=0.8$  ✓
- $2\frac{3}{4}+1\frac{2}{3}=3\frac{3}{4}+\frac{2}{3}=3\frac{9+8}{12}$   
 $4\frac{5}{12}$  dozen  
 $4\frac{5}{12}\times 12=48+5=\underline{53}$
- $\frac{3}{8}+\frac{1}{4}+\frac{1}{8}=\frac{1}{2}+\frac{1}{4}=\frac{3}{4}$   
 $1-\frac{3}{4}=\frac{1}{4}$
- $32\frac{1}{8}-27\frac{3}{4}=5\frac{1}{8}-\frac{3}{4}=4\frac{3}{8}$   
pounds of sausage left.
- $6\frac{1}{4}+4\frac{1}{3}=10\frac{7}{12}$  dozen =  
127 roses
- $5\times 2\frac{1}{2}=12\frac{1}{2}$  mi
- $60\div \frac{2}{3}=90$
- $36\div \frac{3}{4}=48$
- $\frac{1}{3}\times 309=103$   
 $\frac{1}{4}\times 124=31$   
 $\frac{1}{3}\times 27=9$   
 $103-(31+9)=63$
- $\frac{4}{5}=0.8$
- $0.15=\frac{15}{100}=\frac{3}{20}$
- $\frac{10}{8}=1.25$
- $0.45=\frac{45}{100}=\frac{9}{20}$
- $\frac{11}{4}=2.75$
- $0.85=\frac{85}{100}=\frac{17}{20}$
- $2.35=2\frac{35}{100}=2\frac{7}{20}$
- $\frac{12}{5}=2.4$

- $\frac{74}{12}=6\frac{2}{12}=6\frac{1}{6}$
- 20.2
- $3.75=3\frac{3}{4}$
- $\frac{96}{15}=6\frac{6}{15}=6\frac{2}{5}$
- $0.65=\frac{65}{100}=\frac{13}{20}$
- $0.55=\frac{55}{100}=\frac{11}{20}$
- 8.55
- $\frac{13}{4}=3.25$
- 0.85
- $0.45=\frac{45}{100}=\frac{9}{20}$
- $\frac{87}{14}=6\frac{3}{14}$
- $\frac{45}{6}=7\frac{3}{6}=7\frac{1}{2}$
- $40\times 3=120$  mi
- $240\div 40=6$  hours
- $40\times 3=120$  mi
- $180\div 40=4.5$  hr = 4 hr 30 min
- $60\div 3=20$  miles per gal
- $10\times 20=200$  miles
- $10\times 2=\$20$
- $1200\div 20=60$  gallons  
 $2\times 60=\$120$
- $2700\div 4=675$  miles per hour
- $180\div 7.5=24$  miles
- $6\times 60=360$  (miles)
- $150\div 50=3$   
 $3\times 3\times 3=\underline{\$27}$
- Ann:  $5\times \frac{60}{30}=10$   
Ben:  $4\times \frac{60}{20}=12$   
 $2\times (10+12)=\underline{44}$
- $30\div 3=10$   
 $10\times 40=400$  (words)
- $160\div 40=4$   
 $4\times 3=12$  min
- $30\times 30=900$

## Dr. Li's GT4 After School Issue 19

77.  $900 \div 60 = 15$

78.  $2.5 \times 70 + 80 = 175 + 80$   
 $= \underline{255} \text{ (km)}$

79.  $810 \div 3 = 270$

$270 - 80 - 50 = 140$   
 $140 \div 2 = 70$

80.  $56 \div 4 = 14$  miles per hour



# Answer Key

1.  $96=1\times 96=2\times 48=3\times 32=4\times 24=6\times 16=8\times 12$ . Thus, the factors are {1, 2, 3, 4, 6, 8, 12, 16, 24, 32, 48, 96}.
2.  $130=1\times 130=2\times 65=5\times 26=10\times 13$ . Thus, the factors are {1, 2, 5, 10, 13, 26, 65, 130}.
3.  $45=1\times 45=3\times 15=5\times 9$ . Thus, the factors are {1, 3, 5, 9, 15, 45}.
4.  $47=1\times 47$ . Thus, the factors are {1, 47}. It is indeed a prime number.
5.  $50=1\times 50=2\times 25=5\times 10$ . Thus, the factors are {1, 2, 5, 10, 25, 50}.
6. 15
7. 25
8. 12
9. 2
10. 5
11. 40
12. 9
13. 48
14. 12
15. 24
16. 90
17. 3
18. 70
19. 50
20. 55
21.  $\frac{10.5\times 4}{1.75\times 4}=\frac{42}{7}=6$
22.  $50\div\frac{1}{5}\times 5=1250$  mi
23.  $35\div 2.5=14$  gal
24.  $4\div\frac{1}{12}=48$
25.  $8\div\frac{2}{3}=12$
26.  $1\div\frac{2}{15}=7\frac{1}{2}$  hrs
27.  $10\div 1\frac{2}{3}=6$  boxes
28.  $7.5\div 12.5=0.6$
29.  $140\div 7=20$  pounds
30.  $\frac{1}{4}+\frac{1}{2}+\frac{3}{4}=1\frac{1}{2}$  (pounds)
31.  $38-31\frac{1}{7}=7-\frac{1}{7}=6\frac{6}{7}$  pounds.
32.  $\frac{4}{9}$
33.  $45\times\frac{1}{3}=15$   
 $45+15=60$  lb
34.  $6\div 0.75=6\div\frac{3}{4}=8$  days
35.  $120\times\frac{1}{4}=30$   
 $120-30=\$90$
36.  $\frac{3}{6}=\frac{1}{2}$
37.  $30\times\frac{5}{6}=\$25$
38.  $91.1-70.2=20.9$  pounds
39.  $63\div 7=9$   
 $12\times 9=108$
40.  $1-\frac{1}{3}=\frac{2}{3}$   
 $27\times\frac{2}{3}=18$   
 $1-\frac{2}{3}=\frac{1}{3}$   
 $18\times\frac{1}{3}=6$
41.  $0.15=\frac{15}{100}=\frac{3}{20}$
42.  $0.64=\frac{64}{100}=\frac{16}{25}$
43.  $\frac{141}{13}$
44.  $\frac{14}{3}$
45.  $\frac{22}{7}$
46.  $3\frac{3}{4}=\frac{15}{4}$
47.  $0.44=\frac{44}{100}=\frac{11}{25}$
48.  $10.5=10\frac{1}{2}=\frac{21}{2}$
49.  $3\frac{1}{3}$  since  $10\div 3=3$  R 1.
50.  $16\frac{1}{4}$  since  $65\div 4=16$  R 1.
51.  $12\frac{1}{2}$
52.  $5\frac{2}{7}$
53.  $20\frac{2}{3}$
54.  $7\frac{5}{7}$
55.  $3\frac{8}{9}$
56.  $10\frac{5}{8}$
57.  $7\frac{1}{2}$
58.  $6\frac{1}{6}$
59.  $6\frac{3}{14}$
60.  $6\frac{2}{5}$
61.  $\frac{3}{3+4}=\frac{3}{7}$
62. sold : unsold = 3 : 2 = 45 : 30
63. Method I)  
diet : non-diet = 2 : 5 = 4 : 10  
  
Method II)  
 $4\div\frac{2}{7}=14$   
 $14-4=10$
64. B : G = 2 : 1  
 $2+1=3$   
 $36\times\frac{2}{3}=24$  (B)
65.  $180\div 2=\$90$
66.  $2+1=3$   
 $180\div 3=60$   
 $2\times 60=\$120$  (Sam)
67. Method I)  
 $3+2=5$   
 $120\div 5=24$   
 $24\times 3=\$72$  (Josh)  
 $24\times 2=\$48$  (Gary)  
  
Method II)  
 $120\times\frac{3}{5}=\$72$  (Josh)
68. 1:3 = 3 (red): 9 (white)
69.  $64\times\frac{5}{8}=40$  crocodogs
70. 20 cups
71.  $2+3=5$  cups
72. 15 cups
73.  $10\div 2=5$   
 $5\times 5=25$
74. M : N = 1 : 2  
 $1+2=3$   
 $36\div 3=12$
75. A : B = 1 : 3  
 $1+3=4$   
 $A=\frac{52}{4}=13$   
 $B=3\times 13=39$
76.  $26\times 26\times 10\times 10=67600$   
different plates
77. (a)  $210\div 35=6$  (gal)  
(b)  $6\times 2=\$12$
78.  $\frac{1}{8}\times 5280=660$  feet  
 $660\times\frac{1}{3}=220$  yd

## Dr. Li's GT4 After School Issue 20

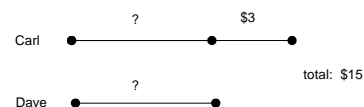
79.  $2.40 \div 3 = 0.8$  (an apple)  
 $2 \times 0.8 = 1.60$  (2 apples)

$3.70 - 1.60 = 2.10$  (3 oranges)  
 $2.10 \div 3 = \$0.70$  (an orange)

80.  $20 - 8 = 12$   
 $12 \div 4 = 3$   
 $1 + 3 = 4$  hrs

# Answer Key

1.  $54=1\times 54=2\times 27=3\times 18=6\times 9$ .  
Thus, the factors are {1, 2, 3, 6, 9, 18, 27, 54}.
2.  $60=1\times 60=2\times 30=3\times 20=4\times 15=5\times 12=6\times 10$ . Thus, the factors are {1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60}.
3.  $62=1\times 62=2\times 31$ . Thus, the factors are {1, 2, 31, 62}.
4.  $68=1\times 68=2\times 34=4\times 17$ . Thus, the factors are {1, 2, 4, 17, 34, 68}.
5.  $69=1\times 69=3\times 23$ . Thus, the factors are {1, 3, 23, 69}.
6. 6
7. 33
8. 120
9. 68
10. 150
11. 120
12. 2
13. 25
14. 29
15. 32
16. 200
17. 8
18. 58
19. 7
20. 5
21.  $\frac{2}{3}\times 45 = (45\div 3)\times 2 = 30$
22.  $24\div 2\times \frac{2}{3} = 8$
23.  $3.5\div 1\frac{3}{4} = 3.5\times \frac{4}{7} = \underline{2 \text{ hrs}}$
24. Method I)  
 $\frac{22\frac{1}{2}\div 3\frac{3}{4}=\frac{45}{2}\div \frac{15}{4}=\frac{45^3}{2}\times \frac{4^2}{15}}{\text{ribbons}} = 6$   
Method II)  
 $22.5\div 3.75 = \frac{2250}{375} = \frac{90}{15} = 6$
25.  $140\div \frac{4}{5} = 175$
26.  $18\frac{1}{4} - 1\frac{3}{4} = 16.5$   
 $16.5\div 5 = \underline{3.3 \text{ pounds}}$
27.  $\frac{1}{3}(36) = 12$   
 $\frac{1}{4}(36 + 12) = 12$   
 $\frac{1}{6}(36 + 12) = 8$   
 $12 - 8 = \underline{4 \text{ (loss)}}$
28.  $5\times 12 = 60$   
 $\frac{1}{2}\times 12 = 6$   
 $60 + 6 = \underline{66 \text{ pens}}$
29.  $6\times 6 = 36$   
 $1 - \frac{1}{4} = \frac{3}{4} \text{ (left)}$   
 $36\times \frac{3}{4} = \underline{27}$
30.  $120 \times \frac{1}{4} = 30$   
 $120 - 30 = \underline{90 \text{ pounds}}$
31. Given the chance of 6 shots, Jack will hit 4 bull's eyes. So Peter is better.
32.  $1 + 2 = 3$   
 $60\div 3 = 20 \text{ (colored)}$   
 $2\times 20 = \underline{40 \text{ (black-and-white)}}$
33.  $81\times \frac{2}{9} = 63 \text{ (dressed up)}$
34.  $2\times 6 = 12$   
 $2\times 8 = 16 \text{ (pieces)}$   
 $\frac{3}{16}\times 12 = \frac{9}{4} = \$2.25$
35.  $\frac{3}{4} - \frac{1}{4} = \frac{1}{2}$   
 $\frac{1}{2}\times 12 = 6 \text{ inches}$
36.  $1 - \frac{3}{4} = \frac{1}{4}$   
 $6\div \frac{1}{4} = 24$   
 $1 - \frac{1}{3} = \frac{2}{3}$   
 $24\div \frac{2}{3} = \underline{36}$
37.  $\frac{1}{2}\times 360 = 180$
38.  $2\times \frac{3}{4}\times 36 = 54$
39.  $\frac{1}{4}\times 56 = \$14$
40. Store A:  
 $3\times 0.25 = 0.75$   
 $3 - 0.75 = 2.25$   
 $2.25\times 4 = \$9$   
Store B:  
 $3\times 0.5 = 1.5$   
 $3 + 1.5 = 4.5$   
 $4.5\times 2 = \$9$   
Both are the same.
41.  $\frac{1}{3}$
42.  $\frac{8}{3}$
43.  $\frac{5}{4}$
44.  $\frac{23}{5}$
45.  $\frac{23}{3}$
46.  $\frac{37}{5}$
47.  $4\frac{11}{25}$
48.  $5\frac{3}{20}$
49.  $6\frac{16}{25}$
50.  $7\frac{9}{20}$
51.  $8\frac{3}{5}$
52.  $\frac{5}{2}$
53.  $3\frac{2}{5}$
54.  $\frac{7}{2}$
55.  $4\frac{1}{2}$
56.  $\frac{9}{2}$
57. 2.64
58. 3.44
59. 4.45
60. 2.15
61.  $5 - 1 = 4$   
 $8 + 4\times 3.5 = \$22$
62.  $11 - 1 = 10$   
 $10\times 3 = 30$   
 $5 + 30 = \$35$
63.  $100 - 5 = 95$   
 $32\times 3 = 96 \text{ (not affordable)}$   
 $31\times 3 = 93 \text{ (just right)}$   
 $31 + 1 = \underline{32}$
64.  $5 + 2\times 2 = \$9$
65.  $5 + 3\times 2 = \$11$
66.  $15 - 5 = 10$   
 $10\div 2 = 5$   
 $5 + 1 = 6 \text{ hours}$
67.  $25 - 3 = 22$   
 $22\div 2 = \$11 \text{ (Dave)}$   
 $11 + 3 = \$14 \text{ (Carl)}$



## Dr. Li's GT4 After School Issue 21

68.  $157 + 23 = 180$   
 $180 - 19 = 161$   
 $\frac{157 + 180 + 161}{3} = 166$

69.  $0.4 \times 5 = 2$   
 $4.4 - 2 = 2.40$   
 $2.4 \div 2 = \underline{\$1.20}$

70. Ben = 14  
 $14 \div 2 = 7$  (Dawn)  
 $7 - 2 = 5$  (Colleen)  
 $5 - 4 = \underline{1}$  (Ed)

71. Peter has \$21.  
 $21 + 3 = 24$  (Quin)  
 $\frac{1}{3}(24) = \$8$  (Rachel)

72. Stone Henge 2695 tons  
Leaning Tower 2790 tons  
Great Pyramid 3347 tons  
Greater Pyra. 6694 tons

73. P = 16 heads

74. Q = 44 legs

75. R = 16 - 10 = 6 heads

76.  $2 \times 6 + 4 \times 10 = 52$  legs

77. X = 2 chickens

78. Y = 4 pigs

79. The table is completed as below.

Num of pages	16
Num of pictures per page	8
Num of Albums	4

The total number of pictures is

$$16 \times 8 \times 4 = 512.$$

80.  $3 + 1 = 4$

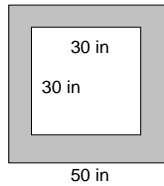
$$60 \div 4 = 15 \text{ (Charlie)}$$

$$3 \times 15 = \underline{\$45} \text{ (Bob)}$$

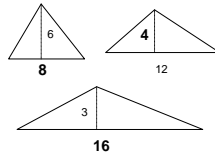
# Answer Key

- $72=1 \times 72=2 \times 36=3 \times 24=4 \times 18=6 \times 12=8 \times 9=9 \times 8$ . Thus, the factors are  $\{1, 2, 3, 4, 6, 8, 9, 12, 18, 24, 36, 72\}$ .
- $78=1 \times 78=2 \times 39=3 \times 26=6 \times 13$ . Thus, the factors are  $\{1, 2, 3, 6, 13, 26, 39, 78\}$ .
- $80=1 \times 80=2 \times 40=4 \times 20=5 \times 16=8 \times 10$ . Thus, the factors are  $\{1, 2, 4, 5, 8, 10, 16, 20, 40, 80\}$ .
- $81=1 \times 81=3 \times 27=9 \times 9$ . Thus, the factors are  $\{1, 3, 9, 27, 81\}$ .
- 4
- $160=1 \times 160=2 \times 80=4 \times 40=5 \times 32=8 \times 20=10 \times 16$ . Thus, the factors are  $\{1, 2, 4, 5, 8, 10, 16, 20, 32, 40, 80, 160\}$ .
- $162=1 \times 162=2 \times 81=3 \times 54=6 \times 27=9 \times 18$ . Thus, the factors are  $\{1, 2, 3, 6, 9, 18, 27, 54, 81, 162\}$ .
- $168=1 \times 168=2 \times 84=3 \times 56=4 \times 42=6 \times 28=7 \times 24=8 \times 21=12 \times 14$ . Thus, the factors are  $\{1, 2, 3, 4, 6, 7, 8, 12, 14, 21, 24, 28, 42, 56, 84, 168\}$ .
- $169=1 \times 169=13 \times 13$ . Thus, the factors are  $\{1, 13, 169\}$ .
- $171=1 \times 171=3 \times 57=9 \times 19$ . Thus, the factors are  $\{1, 3, 9, 19, 57, 171\}$ .
- 14
- 12
- 40
- 15
- 6
- 20
- 50
- 4
- 420
- 63
- Two rectangles + two intersecting lines  
 $4 + 4 + 4 + 4 = \underline{16}$

- (a)  $5 \times 2 = 10$   
(b)  $5 \times 6 - 10 = 20$
- $2(25 + 10) = 70$  in
- $2 \times (15 + 10) = \underline{50}$  in
- $15 \times 10 = 150$  sq. in.
- 4 faces and 8 edges
- $(50 - 20) \times (50 - 20) = \underline{900}$  in<sup>2</sup>



- $50 \div 10 = 5$   
 $4 \times 5 = 20$   
 $20 - 4 = \underline{16}$
- $3 \times 12 = 36$   
 $36 \div 2 = 18$   
 $18 - 10 = 8$   
 $8 \times 10 = \underline{80}$  sq. in.
- $56 \div 2 = 28$   
 $28 - 8 = \underline{20}$  inches
- area =  $\frac{8 \times 13}{2} = 52$
- $192 \div 12 = 16$  inches
- $50 \div 2 - 10 = 15$   
 $15 \times 10 = \underline{150}$  sq. inches
- $2(8 + 10) = 36$  inches
- a)  $2 \times 24 \div 6 = \underline{8}$   
b)  $2 \times 24 \div 12 = \underline{4}$   
c)  $2 \times 24 \div 3 = \underline{16}$

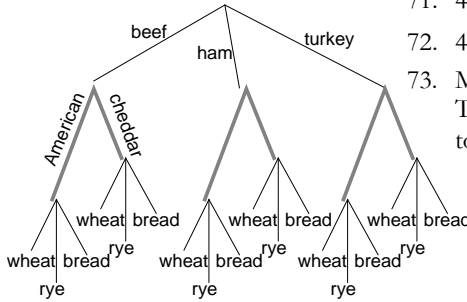


- (a)  $30 \div 2 = 15$   
 $15 - 8 = 7$   
(b)  $7 \times 8 = 56$
- $8 \times 4 = 32$  (perimeter)  
 $32 \div 2 = 16$  (half-perimeter)  
 $16 - 10 = \underline{6}$  inches
- $10 \times 6 = 60$  sq. in.

- The square is larger ( $8 \times 8 = 64$ ).
- $64 \div 4 = 16$  (each side)  
 $16 \div 2 = 8$   
 $2(8 + 16) = \underline{48}$  in (perimeter)
- $\frac{18}{15} = \frac{6}{5} = 1 \frac{1}{5}$
- $\frac{13}{25} - \frac{8}{25} = \frac{5}{25} = \frac{1}{5}$
- $\frac{5}{7}$
- $\frac{1}{3}$
- $\frac{3}{5}$
- $\frac{1}{2}$
- $\frac{1}{3}$
- $1 \frac{7}{17}$
- $1 \frac{11}{21}$
- $\frac{2}{3}$
- $1 \frac{2}{11}$
- $\frac{4}{6} = \frac{2}{3}$
- $\frac{10}{8} = \frac{5}{4} = 1 \frac{1}{4}$
- $\frac{5}{25} = \frac{1}{5}$
- $\frac{25}{35} = \frac{5}{7}$
- $\frac{5}{15} = \frac{1}{3}$
- $21 \frac{5}{12} - 11 \frac{2}{3} = 9 \frac{9}{12} = 9 \frac{3}{4}$
- $4 \frac{1}{3} + 7 \frac{1}{6} + 6 \frac{2}{3} = 18 \frac{1}{6}$  (pounds)
- $4 - 2 \frac{3}{4} = 1 \frac{1}{4}$  gallons
- $35 \frac{1}{2} + 20 \frac{3}{4} + 15 \frac{1}{8} = 71 \frac{3}{8}$  (pounds)
- $\frac{2}{6} = \frac{1}{3}$ . (Must reduce)
- $4 \times 5 = 20$  songs
- $3 \times 5 = 15$  choices

# Dr. Li's GT4 After School Issue 22

64.  $3 \times 2 \times 3 = 18$  choices



70.  $6/11$

71.  $4/11$

72.  $4 \times 4 = 16$

73. Method I)

The outcomes just opposite to what he wants are:

Shirt	Pant	
Blue	blue	1
Red	None	0
White	white	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:

Shirt	Pants	
Blue	black, brown, and white	3
Red	blue, black, brown, and white	4
White	blue, black, brown	3
Black	blue, brown, and white	3
Total		13

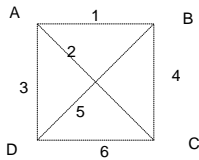
The probability is  $\frac{13}{16}$ .

65.  $4 \times 5 \times 3 = 60$

66.  $3 \times 9 = 27$  paths

67. 4 ways  
mpa, amp, apm, pma

68. 6 of them  
AB, AC, AD, BC, BD, and CD



69. 11

74.  $16 \times 16 = 256$  gallons

75.  $32 \times 32 = 1024$  gallons

76.  $3 \times 2 \times 16 = 96$  ounces

77.  $96 \div 32 = 3$  quarts

78.  $3 \times (2 \text{ ft } 7 \text{ in}) = 6 \text{ ft and } 21 \text{ in}$   
 $= 7 \text{ ft and } 9 \text{ in}$

79.  $\frac{20}{4} \times \frac{15}{3} = 5 \times 5 = 25$

80.  $int(\frac{15}{3}) \times int(\frac{23}{5}) = 5 \times 4 = 20$

$int(\frac{15}{5}) \times int(\frac{23}{3}) = 3 \times 7 = \underline{21}$