Answer Key

1. $\frac{9}{7} = 1\frac{2}{7}$
2. $\frac{8}{6} = 1\frac{2}{6}$
3. $\frac{7}{3} = 2\frac{1}{3}$
4. $\frac{7}{5} = 1\frac{2}{5}$
5. $\frac{13}{4} = 3\frac{1}{4}$
6. $1\frac{1}{8}$
7. $\frac{3}{5}$
8. $\frac{6}{8}$
9. $\frac{5}{7}$
10. $\frac{7}{8}$
11. 49
12. 29
13. 32
14. 52
15. 44
16. 18,000
17. 6,000
18. 14,000
19. 6,000
20. 9,000
21. 16,000
22. 9,000
23. 14,000
24. 60,000
25. 160,000
26. 140,000
27. 1,800
28. 1,400
29. 180,000
30. 18,000
31. 90,000
32. 16,000
33. 900
34. 600
35. 1,600
36. 27
37. 12
38. 9
39. 32
40. 18
41. 24
42. 42
43. 18
44. 24
45. 30
46. 66
47. 28
48. 36
49. 2 & 6 (Remainder)
50. 6
51. 12.3
52. 80
53. 360
54. 30.8
55. 20
56. 2
57. 7
58. 216
59. 100
60. 12
61. 12.8
62. 384
63. 2
64. 12.8
65. 20
66. 12 - (4 + 1) = 7 more miles
67. 17 + 3 = 20
    20×2 = 40
    40 - 3 = 37 yrs old
68. 40÷20 = 2
    2×2 = 4 gallons
69. 200×2 = $400
70. 600×3 = $1800
71. 5×2 = 10 sq. inches
72. 8 vertices

73. 20×20 = 400 (square area)
    10×30 = 300 (rectangle area)
    Ans = A
74. 276÷3 = 92
75. 21×6 = 126 min
76. B
77. VS, VC, VD
    SC, SD
    CD
    Ans = 6
78. 4×7 = 68
79. 180
80. A
81. C
    $\frac{1}{4} + \frac{1}{2} = \frac{3}{4}$
82. 4×2×1 = <u>8</u>
83. 4×(1 + 2 + 1 + 2) = 24
    2×1×2 = 4
    24 + 4 = <u>28</u>
84. C
85. 1 + (-3 + 5) + (-7 + 9) +
    (-11 + 13) + (-15 + 17) = <u>9</u>
86. B
87. D
    12÷2.4 = 120÷24 = 5
88. A
89. C
90. A
91. 90 m^2
92. 55÷(2 + 3) = <u>11</u>
93. $\frac{1}{4} + \frac{3}{8} = \frac{5}{8}$ = 5/8
94. C
95. 16

Answer Key

1. $\frac{5}{24}$
2. $\frac{3}{20}$
3. $\frac{4}{27}$
4. $\frac{7}{10}$
5. $\frac{1}{24}$
6. $\frac{1}{36}$
7. $\frac{11}{90}$
8. $\frac{13}{108}$
9. $\frac{1}{15}$
10. $\frac{8}{45}$
11. 0.6
12. 49000
13. 5
14. 630000
15. 0.03
16. 5600
17. 3
18. 28000
19. 2
20. 16000
21. 0.4
22. 3200
23. 90
24. 4500
25. 3
26. 4000
27. 2
28. 480000
29. 70
30. 640000
31. 3.1
32. 9.5
33. 4.2
34. 6.5
35. 3.2
36. 7.4
37. 4.75
38. 6.25
39. 7.125
40. 3.375
41. 50
42. 7.5
43. 0.9
44. 0.32
45. 0.68
46. $\frac{1}{6}$
47. 0.9
48. 180
49. 100
50. .03
51. .04
52. 81
53. 25
54. 140
55. 400
56. 20
57. 80
58. 3×5^3

$3|\underline{3\ \ 7\ \ 5}$
$5|\underline{1\ \ 2\ \ 5}$
$5|\underline{2\ \ 5}$
5

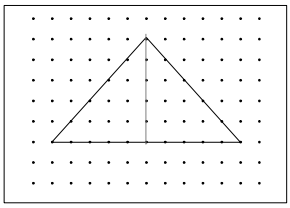
$375=3\times5\times5\times5=3\times5^3$

59. 18
60. C
61. 14 - 3 - 7 = 4 days
62. 5.26
63. 1.7
64. 0.83
65. 0.2
66. 2.6
67. 35×10 = $350
68. 80 - 15 = $65 left
69. (7, 21), (14, 28), (21, 35)
70. 12 + 24 + 9 = 45 (pretzels)
71. 13×12 = 156 books
72. 105 - 87 = 18 (pounds)
73. 7×140 = 980 (cans)
74. 32.4 (slowest time)
    31.5 (fastest time)

75. 7.5×200 = $1,500
76. 150×3 = 450 (pounds)
77. 4×350 = 1400
78. ¼×76 = 19
79. 12,500×4 = 50,000
80. 2×20 - 15 = 25
81. .003
82. 8
83. 20÷(20+20) = $\frac{1}{2}$ = 50%
84. 40:15 = 8:3
85. $1 - \frac{1}{6} = \frac{5}{6}$
    $\frac{5}{6} \times \frac{1}{7} = \frac{5}{42}$
    $8.4 \times \frac{5}{42} = 0.2 \times 5 =$ 1 lb
86. In a trip of 600 miles,
    (600÷200)×8.5 = 25.5 gal
    (a) A
    (600÷120)×5.2 = 26 gal (white car more expensive)
    (b) 26 – 25.5 = 0.5 gal less by the red car
87. $88 \times \frac{1}{2} = 44$
    $1 - 25\% = 1 - \frac{1}{4} = \frac{3}{4}$
    $44 \times \frac{3}{4} =$ $33
88. 37.5÷50 = 0.375 = 75%
89. 3.6÷12 = $0.30 (12-can)
    2.40÷6 = $0.40 (6-can)
    Ans= 10¢ per can
90. $12 \div (1 + \frac{1}{2}) = 8$
91. $12 \times (1 + \frac{1}{3}) = 16$
92. 4×4×4×4 = 256
93. $\frac{21}{15}$= 1.4 (hr) = 1 hr 24 min
    9:30 + 1:24 = 10:54 A.M.
94. B
95. A
96. 72 °F
97. $2 \times \frac{2}{3} = \frac{4}{3} = 1\frac{1}{3}$ = 1 1/3 hr
98. $35 \times \frac{5}{7}$ = 25 gallons
99. $28 \times \frac{5}{7}$= 20
    20×4 = 80 quarts
100. 85×5 = 425
    425 – (81+73+80+94) = 97

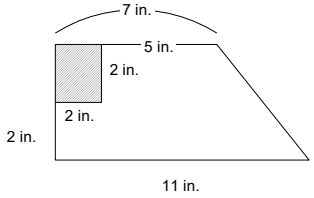
Answer Key

1. $\frac{17}{30}$
2. $\frac{5}{4}$
3. $\frac{37}{40}$
4. $3\frac{2}{3}$
5. $3\frac{3}{10}$
6. $7\frac{11}{60}$
7. $1\frac{1}{24}$
8. $7\frac{41}{48}$
9. $2\frac{8}{15}$
10. $3\frac{23}{36}$
11. 5%
12. 2.5%
13. 1.25%
14. 2%
15. 15%
16. 35%
17. 17.5%
18. 27.5%
19. 22%
20. 14%
21. 45
22. 9
23. 50
24. 0.2
25. 0.35
26. 0.49
27. 0.45
28. 0.0125
29. 0.225
30. 0.6
31. 1800
32. 1.6
33. 2.8
34. 900
35. 0.012
36. 0.32
37. 0.8
38. 0.12
39. 0.0625
40. 0.2
41. 10
42. 50%
43. 60%
44. 75%
45. 120
46. 30
47. 20
48. 30
49. 180
50. 90
51. 45
52. 45
53. 120
54. 120
55. 300
56. 300
57. 150
58. 150
59. 48
60. 48
61. Base = 9, Height = 7 $\Rightarrow$ Area = $\frac{1}{2}(9\times7)=31.5$
62. Base = 5, Height = 6 $\Rightarrow$ Area = $\frac{1}{2}(5\times6)=15$
63. Base = 5, Height = 6 $\Rightarrow$ Area = $5\times6 = 30$
64. Top = 5, Base = 10, Height = 6 $\Rightarrow$ Area = $\frac{1}{2}(5+10)\times6=45$
65. $\frac{1}{2}\times5\times10 = 25$

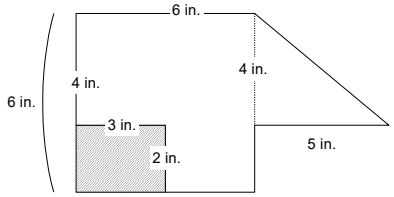


66. Partition it into two congruent triangles, each with an area of
    $\frac{1}{2}(4\times6) = 12$
    The two triangles have a combined area of
    $12\times2 = 24$
67. $3\times3\times4 = 48$
68. $20 + 2\times2 = 24$ in

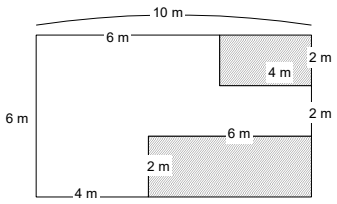
69. 10 + 2×2 = 14 in
70. 2(24 + 14) = 76 in
71. 24×14 = 336 in^2
72. 20×10 = 200 in^2
73. 336 - 200 = 136 in^2
74. The area of the original shape = trapezoid - shaded square = $\frac{1}{2}$(7+11)×4 - 2×2=36-4=32



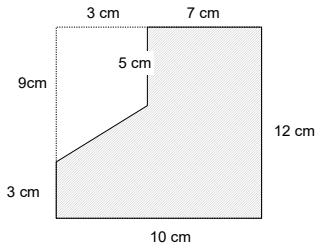
75. The area of the original shape is 6×6 - 3×2 + $\frac{1}{2}$(4×5) = 40



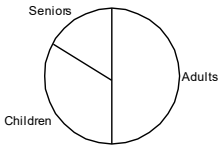
76. The perimeter of the original shape is identical to the rectangle, which is 2(10+6)=32. (Note: This is a pretty smart way. You will still get the same answer by adding section by section.) The area of the original shape = rectangle - two smaller rectangles = 6×10 - 4×2 - 2×6 = 60-8-12 = 40.



77. 60×10×2 = 1200
78. The rectangle = 6×4=24. The trapezoid = $\frac{1}{2}$(4+6)×2=10. The total = 24+10=34 (in^2).
79. There are two trapezoids. The left one = $\frac{1}{2}$(6+4)×3 = 15. The right one = $\frac{1}{2}$(4+6)×5=25. The total = 15+25 = 40 in^2.
80. Let's find the missing trapezoid. It is $\frac{1}{2}$(5+9)×3=21. The whole rectangle = 10×12=120. Thus, the shade part = 120-21=99 cm^2.



81. $1-\frac{3}{5}=\frac{2}{5}=2/5$
82. $35\times\frac{2}{5}=14$
83. 120 ÷ 6 = 20
    480 ÷ 20 = 24 gal
84. 15%
85. See the chart below.



86. B
87. 3 3/8
88. Method I)
    $\frac{80+70+60+90+80}{5}=76$

    Method II)
    Move 10 points from the last test to the third one. Now all marks exceed 70 points. The first one has a surplus of 80 – 70 = 10 points, while the fourth one has a 90 – 70 = 20 points. Therefore, the total surplus is
    10 + 20 = 30
    30÷5 = 6
    70 + 6 = 76
89. 39÷3 = 13
    13 + 9 = 22
90. 9×8 = 72 in = 6 ft
91. A
    SUV is more efficient.
    SUV: 240÷8 = 30 (mpg)
    MIN: 299÷11 < 30 (mpg)
92. 184 ÷ 8 = 23 miles per gallon
93. $\frac{35}{40}\times376=\frac{7}{8}\times376=47\times7=\$329$
94. 8/7

95. $\frac{2}{3} = 2/3$
96. 0.8
97. $13\frac{1}{2} \times 12 \div 13\frac{1}{2} = 12$
98. $\frac{2400}{80} - 14 = 16$
99. $80 \times 70\% = 80 \times .7 = \$56.00$
100. $\frac{7}{3} \times 60 = 140$

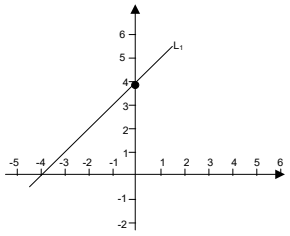
Answer Key

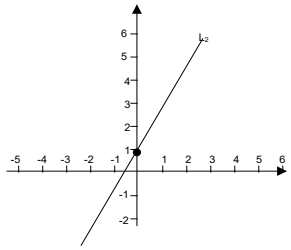
1. $0.\overline{3}$
2. $0.\overline{6}$
3. $0.\overline{1}$
4. $0.\overline{2}$
5. $0.\overline{3}$
6. $0.\overline{4}$
7. $0.\overline{5}$
8. $0.\overline{6}$
9. $0.\overline{7}$
10. $0.\overline{8}$
11. B
12. A
13. $0.\overline{3}$
14. $0.\overline{6}$
15. $0.\overline{01}$
16. $0.\overline{04}$
17. $0.\overline{23}$
18. $0.\overline{466557}$
19. $0.\overline{36}$
20. $0.\overline{355446}$
21. $\frac{2}{7}$
22. $\frac{3}{17}$
23. $\frac{4}{31}$
24. $\frac{5}{8}$
25. $\frac{6}{23}$
26. $\frac{7}{10}$
27. $\frac{8}{41}$
28. $\frac{9}{73}$
29. $\frac{10}{11}$
30. $\frac{7}{12}$
31. 3/10
32. 10
33. 7
34. 16/25
35. 8/33
36. $\left(\frac{8}{7}\right)\left(\frac{21}{2}\right) = 12$
37. $\left(\frac{10}{3}\right)\left(\frac{9}{5}\right) = 6$
38. $\left(\frac{48}{5}\right)\left(\frac{15}{8}\right) = 18$
39. 6
40. 7
41. 14
42. 9
43. 63
    25/21 = 1 4/21 = 1 12/**63**
44. 8
45. 25
46. $2^3 \times 7$
47. $2^4 \times 5$
48. 3^4
49. 2^6
50. $3^2 \times 7$
51. 2×5^2
52. $2^2 \times 3 \times 5$
53. $2^3 \times 3^2$
54. 3×5^2
55. 2×3^3
56. $6x^2 + 3x$
57. $2x^4 + 4x^3 + 6x^2$
58. $6x^2 + 3x + 2x^2 + 4x + 6$
    $= 8x^2 + 7x + 6$
59. $10x^2$
60. $6x + 3$
61. $-3x^2 + 12x + 6$
62. $6x + 3 + 2x^2 + 4x + 3$
    $= 2x^2 + 10x + 9$
63. $6x + 3 - 3x^2 + 12x + 6$
    $= -3x^2 + 18x + 9$
64. $2(3x^2 - 4x + 7) + 3(5x^2 + x + 11)$
    $= 6x^2 - 8x + 14 + 15x^2 + 3x + 33$
    $= 21x^2 - 5x + 47$
65. $8x^2 - 3x + 18$
66. $x^2 + 7x + 12$
67. $x^2 + 13x + 36$
68. $x^2 + 9x + 20$
69. $x^2 + 7x + 12$
70. $x^2 + 10x + 24$
71. $x^2 + 11x + 28$

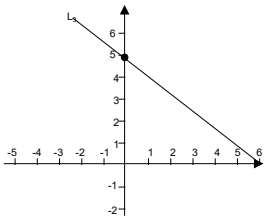
72. $x^2 + 12x + 32$
73. $x^2 + 12x + 35$
74. $x^2 + 13x + 40$
75. $3x^2 + 17x - 28$
76. 1024
77. 70%(**120**) = 84
    or
    84÷0.7 = 120
78. 30%×120 = 36
79. $72\times\frac{5}{6} = 60$
80. 10000×20% = 2000
    10000 + 2000 = 12,000
81. 184÷8 = 23 (miles)
82. 105 = 3×5×7
    5×7 = 35
83. (a) $36\div\frac{4}{5} = 36\times\frac{5}{4} = 45$
    D)
    (b) $45\div\frac{3}{4} = 45\times\frac{4}{3} = 60$ (G)
84. 15
85. $\frac{18}{8} = \frac{9}{4} = \frac{81}{x}$
    $x = 36$
86. 150/200 = $\frac{3}{4}$ = 0.75 = 75%
87. $\frac{1}{4}$ = 0.25 = 25%
88. 128÷16 = 8 pints a gallon
    576÷8 = 72 gal
89. 1 + 20% = 1.2
    3,000×1.2 = 3,600
90. **5000**×1.2 = 6000
    or
    6000÷1.2 = 5000
91. GCD(54, 36) = 18
    GCD(18, 24) = 6
92. 1500 – 180×5 = $600
93. MP3: 400×0.6 = 240
    Left: 400×0.4 = 160 or 400 – 240 = $160
94. 40 min = $\frac{2}{3}$ hr
    $\frac{2700}{4}\times\frac{2}{3} = \frac{900}{2}$ = 450 mi
95. 45%×80 = .45×80 = 36

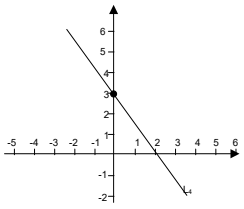
Answer Key

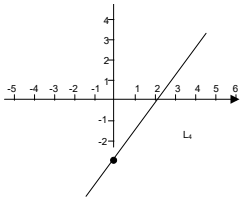
1. ⅖
2. 30
3. 5.4
4. 11
5. 70
6. 50%
7. 10
8. 40
9. $1\frac{1}{3}$
10. $\frac{3}{4}$
11. 25%
12. 51
13. 0.0196
14. 5.45
15. 169
16. 625
17. 504
18. 1681
19. 960
20. 72400
21. 1
22. 3
23. 9
24. 2
25. −5
26. 3
27. 8
28. 9
29. 2
30. 9

31. 

32. 

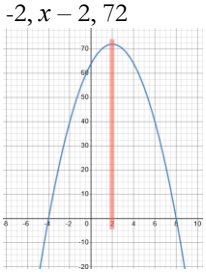
33. 

34. 

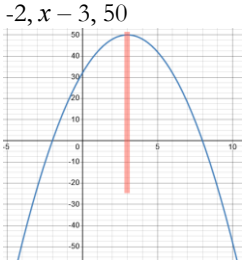
35. 

36. $(x + 1)(x + 7)$
37. $(x – 1)(x + 7)$
38. $(x – 7)(x + 1)$
39. $(x – 7)(x – 1)$
40. $(x + 1)(x + 8)$
41. $x = 1$ or $x = -8$
42. $x = 8$ or $x = -1$
43. $x = 8$ or $x = 1$
44. $x = -1$ or $x = -9$
45. $x = 1$ or $x = -9$
46. a) $3, x + 5, x – 5$
    b) -5, 5; 0
    c) U, 0, -75
    d) $1, x$, -75

47. a) -1, $x + 4$, $x - 6$
    b) -4, 6; 1
    c) D, 1, 25
    d) -1, $x - 1$, 25

48. a) -2, $x + 4$, $x - 8$
    b) -4, 8; 2
    c) D, 2, 72
    d) -2, $x - 2$, 72
    e) 

49. a) 2, $x + 3$, $x - 7$
    b) -3, 7; 2
    c) U, 2, -50
    d) 2, $x - 2$, -50

50. a) -2, $x + 2$, $x - 8$
    b) -2, 8; 3
    c) D, 3, 50
    d) -2, $x - 3$, 50
    e) 

51. $1 + \frac{1}{5} + \frac{1}{30} = 1\frac{7}{30}$

52. $33\frac{1}{3}$ %

53. $83\frac{1}{3}$%

54. $25.\overline{5}$

55. $0.2\overline{5}$

56. $1.\overline{6}$

57. $0.1\overline{6}$

58. $\frac{0.1\overline{6}}{2} = \frac{0.16\overline{6}}{2} = 0.083\overline{3}$

59. $0.0\overline{1}$

60. $0.0\overline{01}$

61. 20%×40 = 8
    8×10 = 80
    80 – 40 = 40

62. 40%×50 = 20
    $20 \div \frac{1}{4} = 80$
    80 – 50 = 30

63. 24×25% = 6
    6 ÷ 20% = 30
    30 – 24 = 6

64. 75%×12 = 9
    9÷50% = 18
    18 – 12 = 6

65. 60×30% = 18
    18÷25% = 72
    72 – 60 = 12

66. $4^6 = (4\times4)^3 = 16^3$
    Ans = 3

67. 4/3

68. $0.5x + 1 = 0.2x + 10$
    $0.3x = 9$
    $x = 30$

69. 17÷25 = 0.68 = 68%

70. 4 lb 6 oz = $4\frac{6}{16} = 4\frac{3}{8}$lb
    $0.4\times4\frac{3}{8}$ = \$1.75

71. 60÷2 = 30
    60 – 20= 10 (width)
    old area = 20×10 = 200
    Since each has the same increase,
    40÷4 = 10.
    new length = 20+10 = 30
    new width = 10+10 = 20
    new area = 30×20 = 600
    the increase of area is 600 = 200 = 400 in^2

72. 485 + 55 = 540
    540÷9 = \$60.00

73. 120×4 = \$480 (regular)
    2,400 – 480 = \$1,920 (balcony)
    1920÷8 = 240 (balcony seats)

74. 3½×5 = 17.5
    20-17.5 = 2½ = 2 1/2 in

75. ½(20^2 – 10^2)π
    = ½×300π
    = 300×1.57
    = 471 cm^2

76. $(x - ½)^2 = 16$
    $x - ½ = \pm4$
    x = ½ ±4 = 4½ or -3½
    Ans = -3.5 & 4.5 (in increasing order)

77. A

78. 60/(½+¾) = 48 mph

79. 12 + 18 = 30
    25% + 15% = 40%
    40%×30 = 12
    12 – 3 = 9 more hits

80. 5 ft 4 in = 5⅓ ft
    5⅓:6 = 16:18 = 8:9

81. 4×100 + 7×20 = \$540

82. Each side of Square A is 36 = 6×6, its perimeter is 4×6 = 24. The perimeter of Square B is 24 – 12 = 12, each side is 12 ÷ 4 = 3 in, the area is 3×3 = 9 in^2.

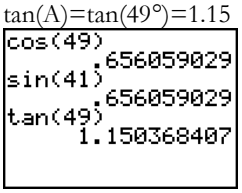
83. 4×5 = 20

84. In the rectangle, the length is twice the width, the width is 10 cm. The area of the two combined circles is $2(10^2)\pi = 200\pi = 200$ pi

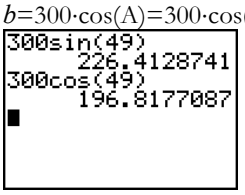
85. (1, 1), (1, 2), (2, 1), and (2, 2)
$\frac{4}{36} = ⅑ = 1/9$

Answer Key

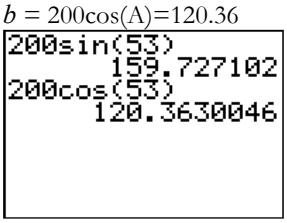
1. $(25^{\frac{1}{2}})^3 = 5^3 = 125$
2. $\frac{1}{16^{\frac{1}{2}}} = \frac{1}{4}$
3. $(-27)^{\frac{4}{3}} = ((-27)^{\frac{1}{3}})^4 = (-3)^4$
4. $(4)^{\frac{3}{2}} = (4^{\frac{1}{2}})^3 = 8$
5. 9
6. $\frac{1}{9}$
7. 10
8. 5
9. 25
10. 1/25
11. -2
12. -1
13. 1
14. 11
15. $\frac{1}{4}$
16. $\frac{2}{3}$
17. 5
18. 4
19. 125
20. 9
21. $\frac{xy}{2x-y}$
22. $\frac{2x(x-3)}{2y} = \frac{x(x-3)}{y}$
23. $\frac{3(x+4y)}{6xy} = \frac{x+4y}{2xy}$
24. $\frac{6xy(x+1)(x-1)}{x(x+1)(x+4)} = \frac{6y(x-1)}{x+4}$
25. $\frac{15x(x+1)(x-1)}{5x^2(x+1)} = \frac{3(x-1)}{x}$
26. $\frac{x(x+4)}{(x+4)(x-4)} = \frac{x}{x-4}$
27. $\frac{6a+4-5(a+1)}{(a+1)(a-1)}$
    $= \frac{a-1}{(a+1)(a-1)}$
    $= \frac{1}{a+1}$
28. $\frac{a^2+2a+1-2a}{a(a+1)}$
    $= \frac{a^2+1}{a(a+1)}$
29. $\frac{8}{x(x-4)} + \frac{2(x-4)}{x(x-4)}$
    $= \frac{2x}{x(x-4)} = \frac{2}{x-4}$
30. $\frac{4}{x(x+7)} - \frac{x+7}{x(x+7)} = \frac{-(x+3)}{x(x+7)}$
31. $\frac{13x-18}{(x-1)(2x-3)}$
32. $3(\frac{x}{2x+5} + 1) = \frac{3(x+2x+5)}{2x+5} = \frac{3(3x+5)}{2x+5}$
33. $\frac{35b^2}{80a^2b^3} + \frac{12a^3}{80a^2b^3} = \frac{35b^2+12a^3}{80a^2b^3}$
34. $\frac{35a}{60a^2b} - \frac{44b}{60a^2b} = \frac{35a-44b}{60a^2b}$
35. $\frac{a-3(a-2)}{(a-2)(a+2)} = \frac{-2a+6}{(a-2)(a+2)} = \frac{-2(a-3)}{(a-2)(a+2)}$
36. $\frac{3x+6+12x-8}{12} = \frac{15x-2}{12}$
37. $\frac{3x^2-2x+8}{x(x-4)}$
38. $\frac{3n+90-2n+60}{(n-30)(n+30)} = \frac{n+150}{(n-30)(n+30)}$
39. $\frac{1+4(y-2)}{(y+8)(y-2)} = \frac{4y-7}{(y+8)(y-2)}$
40. $\frac{2x^2+2x+5x-5}{(x+1)(x-1)} = \frac{2x^2+7x-5}{(x+1)(x-1)}$
41. $\sin(A) = \frac{20}{52} = \frac{5}{13}$
    $\cos(A) = \frac{48}{52} = \frac{12}{13}$
    $\tan(A) = \frac{20}{48} = \frac{5}{12}$
42. $x = \sqrt{18^2 + 24^2} = 30$
43. sin(A) = 18/30=3/5
44. cos(A) = 24/30=4/5
45. tan(A)=18/24=3/4
46. sin(B)=24/30=4/5
47. cos(B)=18/30=3/5
48. tan(B)=4/3
49. cos(A)=.656
50. B=90°-A=41°
    sin(B)=.66
51. tan(A)=tan(49°)=1.15



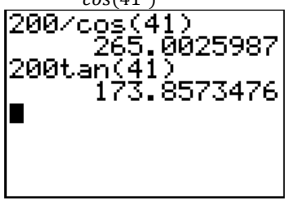
52. a=300·sin(A)=300·sin(49°)=226.21
53. b=300·cos(A)=300·cos(49°)=196.82



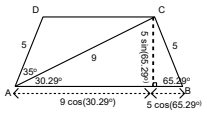
54. a = 200sin(A)=159.73
    b = 200cos(A)=120.36



55. To solve c, we should use cosine, instead of sine since $\cos(A)=\frac{200}{C}$. (a) To solve a, we should use tangent since $\tan(A) = \frac{a}{200}$
a = 200·tan(A) =173.86
(b) c = $\frac{200}{\cos(41°)}$ = 265



56. 50sin35° = 28.68
57. $\tan^{-1}(x/20)$ = 55.11
58. 50cos35° - 20 = 120.96
59. To figure out cos(A), we do not need to know about the measure of ∠A. Instead, $\cos^2(A) = 1 - \sin^2(A) = .91 \Rightarrow \cos(A) = 0.95$.
60. On the other hand, $\tan(A) = \frac{\sin(A)}{\cos(A)} = \frac{.3}{.95} = 0.32$
61. Let's assume AB=BC=3, BE=1, and BF = 2. $\angle BAE=\tan^{-1}(\frac{1}{3})=18.435°$. $\angle BAF=\tan^{-1}(\frac{2}{3})=33.690°$.
62. Draw the diagonal BD, its length is $2\sqrt{12^2-10^2} = 4\sqrt{11}$. Thus, its area is $\frac{1}{2}AC\times BD=\frac{1}{2}(20)(4\sqrt{11}) = 40\sqrt{11}$.
63. $\angle BAD=2\angle CAD= 2\cos^{-1}(10/12)= 2\cos^{-1}(5/6)=67.114°$.
64. $\angle ADC = 2\sin^{-1}(5/6)=126.566°$
65. The height of BC is $\sqrt{10^2-3^2}=\sqrt{91}$. The area of ΔABC is $\frac{1}{2}(6)(\sqrt{91})=3\sqrt{91}$.
66. Draw the altitude AD to the side BC. Since the altitude AD also bisects ∠BAC. Now that $\angle DAC=\sin^{-1}(3/10)\approx 17.458°$. Thus, $\angle BAC=2(\angle DAC)\approx 34.915°$.
67. $\angle A=\cos^{-1}\frac{4^2+5^2-7^2}{2(4)(5)}\approx 101.54°$.
68. $\angle B=\cos^{-1}\frac{4^2+7^2-5^2}{2(4)(7)}\approx 44.42°$.
69. $\angle C=\cos^{-1}\frac{7^2+5^2-4^2}{2(7)(5)}\approx 34.05°$.
70. $\frac{1}{2}(4)(5)\sin\angle A= \frac{1}{2}(20)(\sin 101.54°) \approx 9.80$
71. This is a right triangle.
(0.21, 0.72, 0.75) = 0.03(7, 24, 25)
$\frac{1}{2}(0.21)(0.72)=0.0756$ m².
72. The height to BC = 3tan70°≈8.242
73. $\frac{1}{2}\times\text{base}\times\text{height}=\frac{1}{2}(6)(8.242) \approx 24.727$.
74. $CD^2 = 5^2 + 9^2 - 2(5)(9)\cos 35° \approx 32.28$. Thus, CD≈5.68 cm.
75. $\angle ACD\approx\cos^{-1}(9^2+5.68^2-5^2)/(2\times 9\times 5.68) \approx 30.31°$.
76. ∠BAC = ∠ACD (alternate interior) = 30.31°



77. ∠ABC = 35° + 30.31° = 65.31°
78. ∠ACB ≈ 180° – 30.31° – 65.29° ≈ 84.4°
79. The height is 5sin(65.29°) or 9sin(30.31°) = 4.54 cm
80. 9cos30.31° + 5cos65.31° ≈ 9.85 cm