Chapter P Exercises

1. Rational
2. Irrational
3. Origin
4. Absolute Value
5. Composite
6. Prime
7. Variables, Constants
8. Terms
9. Coefficients
10. Zero-Factor Property
11. (a) $1, 2, 5$ (b) $0, 1, 2, 5$ (c) $-11, -9, -4, 0, 1, 2, 5$ (d) $-\frac{7}{2}, \frac{2}{3}$ (e) $\sqrt{2}$
12. (a) $5, 12$ (b) $0, 5, 12$ (c) $-7, -3, 0, 5, 12$ (d) $-\frac{7}{3}, \frac{5}{4}, 3.12$ (e) $\sqrt{5}$
13. (a) 1 (b) 1 (c) $1, -6, -13$ (d) $0.666\ldots, 2.01$ (e) $0.010110111\ldots$
14. (a) 4 (b) 4 (c) $4, -75$ (d) $0.7575, -4.63$ (e) $2.3030030003\ldots, \sqrt{10}$
15. (a) 8 (b) 8 (c) $-1, 8, -22$ (d) $-\frac{1}{3}, \frac{6}{3}, -7.5$ (e) $-\pi, \frac{1}{2}\sqrt{2}$
16. (a) $25, 7, 13$ (b) $25, 7, 13$ (c) $25, -17, 7, 13$ (d) $-\frac{12}{5}, \sqrt{9}, 3.12, -11.1$ (e) $\frac{1}{2}\pi$
17. skip
18. skip
19. 0.625
20. $0.\overline{3}$
21. $0.\overline{123}$
22. $0.\overline{54}$
23. $-2.5 < 2$
24. $-6 < -2.5$
25. $-4 > -8$
26. $-3.5 < 1$
27. $\frac{3}{2} < 7$

28. $1 < \frac{16}{3}$
29. $\frac{5}{6} > \frac{2}{3}$
30. $-\frac{8}{7} < -\frac{3}{7}$
31. (a) x is less than or equal to 5 (b) skip (c) unbounded
32. (a) x is greater than or equal to -2 (b) skip (c) unbounded
33. (a) x is less than 0 (b) skip (c) unbounded
34. (a) x is greater than 3 (b) skip (c) unbounded
35. (a) a set of numbers greater than or equal to 4 (b) skip (c) unbounded
36. (a) a set of numbers less than 2 (b) skip (c) unbounded
37. (a) x is greater than -2 and less than 2 (b) skip (c) bounded
38. (a) x is greater than or equal to 0 and less than or equal to 5 (b) skip (c) bounded
39. (a) x is greater than or equal to -1 and less than 0 (b) skip (c) bounded
40. (a) x is greater than 0 and less than or equal to 6 (b) skip (c) bounded
41. (a) a set of numbers greater than or equal to -2 and less than 5 (b) skip (c) bounded
42. (a) a set of numbers greater than -1 and less than or equal to 2 (b) skip (c) bounded
43. $y \geq 0$
44. $y \leq 25$
45. $-2 < x \leq 4$
46. $-6 \leq y < 0$
47. $10 \leq t \leq 22$
48. $-3 \leq k < 5$
49. $W > 65$
50. $2.5 \leq r \leq 5$
51. 10
52. 0
53. 5
54. 3
55. -1
56. -6
57. -1

58. -9
59. -1
60. 1
61. $>$
62. $=$
63. $=$
64. $<$
65. $=$
66. $>$
67. 51
68. 51
69. $\frac{5}{2}$
70. $\frac{10}{4}$
71. $\frac{128}{75}$
72. 14.99
73. $|x-5| \leq 3$
74. $|x+10| \geq 6$
75. $|y| \geq 6$
76. $|y-a| \leq 2$
77. 179
78. 37
79. $656, 5635$
80. $372, 470$
81. $305, 1882$
82. $38, 128.75$
83. $1453.2, 107.4$
84. $1722.0, 69.3$
85. $2025.5, 236.3$
86. $1853.4, 157.8$
87. $1880.3, 412.7$

88. $2407.3, 248.1$

89. Variables : $7x$, Constants : 4, Coefficients : 7

90. Variables : $6x^3, -5x$, Constants : $none$, Coefficients : $6, -5$

91. Variables : $\sqrt{3}x^2, -8x$, Constants : -11, Coefficients : $\sqrt{3}, -8$

92. Variables : $3\sqrt{3}x^2$, Constants : 1, Coefficients : $3\sqrt{3}$

93. Variables : $4x^3, \frac{x}{2}$, Constants : -5, Coefficients : $4, \frac{1}{2}$

94. Variables : $3x^4, -\frac{x^2}{4}$, Constants : $none$, Coefficients : $3, -\frac{1}{4}$

95. (a) -10 (b) -6

96. (a) 30 (b) -12

97. (a) 14 (b) 2

98. (a) -10 (b) 0

99. (a) Division by Zero (b) 0

100 (a) $\frac{1}{2}$ (b) Division by Zero

101 Associative Property of Addition

102 Multiplicative Inverse Property

103 Multiplicative Inverse Property

104 Additive Inverse Property

105 Distributive Property

106 Additive Identity Property

107 Distributive Property and Multiplicative Identity Property

108 Distributive Property

109 Associative Property of Addition

110 Associative Property of Multiplication

111 Distributive Property

112 Associative Property of Multiplication and Multiplicative Inverse Property

113 $\frac{1}{2}$

114 $\frac{2}{7}$

115 $\frac{3}{8}$

116 $\frac{59}{66}$

117 48

118 -3

119 $\frac{5x}{12}$

120 $\frac{5x}{27}$

121 (a) Negative (b) Negative

122 (a) Positive (b) Positive

123 (a) $5, 10, 500, 50000, 5000000$ (b) it gets infinitely bigger?

124 (a) $5, 0.5, 0.05, 0.0005, 0.00005$ (b) it approaches 0

125 . True, a is any positive number, b is any negative number, however $-b$ is any positive number, ergo, the result of $a + (-b)$ has to be a positive number.

126 . False, a is any positive number, b is any negative number, a positive number multiplied by a negative number will always result with a negative number, ergo $ab < 0$.

127 False, bigger denominator means smaller value, ergo $\frac{1}{a} > \frac{1}{b}$.

128 . False, Fractions may only Add or Subtract with Like Denominators. $\frac{a+b}{c} = \frac{a}{c} + \frac{b}{c}$ satisfies that condition, whereas $\frac{c}{a+b} = \frac{c}{a} + \frac{c}{b}$ does not.

129 . (a) No, the expressions will equal only if both u and v have the same sign (Positive or Negative), and not equal to each other if u and v have different signs from each other. (b) Yes, if the two expressions are not equal, that means precisely one of u and v is a negative number, which means $|u + v|$ will always be an absolute value of the result from a subtraction, whereas $|u| + |v|$ will always be an addition of two positive numbers.

130 . Yes, Nonnegative means any number greater than or equal to 0. Positive means any number greater than 0. In other words, $x \geq 0$ (nonnegative) is not the same thing as $x > 0$.

131 Yes, 2 is an even prime number because it is divisible by 1 and itself.

132 No, because a number cannot be both repeating and non-repeating.

133 . Yes, $|a| = -a$ if and only if $a = 0$. Otherwise, no. Absolute value of a number is the distance between the number and the origin, and it will never be a negative value due to the fact that it is a distance without direction.

134 . I don't want to.