33. $\frac{6}{7}$

34. 1

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

36. $3\frac{1}{2}$

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

38. $-\frac{1}{15}$

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

40. $\frac{15}{4}$

41. $8\frac{5}{8}$

42. 3

43. $3\frac{5}{6}$

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

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

46. 4

47. $\frac{9}{16}$

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

49. $6\frac{1}{4}$ or $\frac{25}{4}$

50. 24

51. 6

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

53. 6

54. $15\frac{1}{6}$

55. $\frac{3}{8}$

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

57. 6

58. $\frac{8}{3}$

59. $\frac{1}{6}$

60. $\frac{4}{25}$

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

62. $\frac{12}{31}$

63. $\frac{11}{6}$, $\frac{15}{8}$

64. $\frac{5}{6}$, $\frac{7}{8}$, $\frac{11}{12}$

65. $\frac{7}{12}$, $\frac{2}{3}$, $\frac{25}{36}$, $\frac{5}{6}$

66. 4

67. 16

68. 9

69. 9

70. $\frac{4}{15}$

71. 1,400,000

72. 18; yes

73. $16.10

74. $12.65

75. $6\frac{1}{4}$

76. $28.75

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

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

79. $\frac{11}{35}$

80. $\frac{5}{12}$

81. Q

82. T

83. S

TOPIC 3: DECIMALS

A. Meaning of Places:

Each digit position has a value ten times the place to its right. The part to the left of the point is the whole number part.

example: 324.519
$$= (3 \times 100) + (2 \times 10) + (4 \times 1)$$
$$+ \left(5 \times \tfrac{1}{10}\right) + \left(1 \times \tfrac{1}{100}\right) + \left(9 \times \tfrac{1}{1000}\right)$$

Problems 1-5: Which is larger?

1. .59 or .7
2. .02 or .03
3. .2 or .03
4. 1.9 or 1.09
5. .5 or .49

Problems 6-8: Arrange in order of size from smallest to largest:

6. .02, .2, .19, .0085
7. .45, .449, .451, .5
8. 4.5, 5.4, 4.49, 5.41

Repeating decimals are shown with a bar over the repeating block of digits:
example: $.\overline{3}$ means .333333333…
example: $.\overline{43}$ means .4343434343…
example: $.4\overline{3}$ means .4333333333…

Problems 9-10: Arrange in order, large to small:

9. $.\overline{3}$, .3, .34
10. .6, $.\overline{67}$, .67, $.6\overline{7}$, $.\overline{6}$

B. Fraction-decimal conversion:

Fraction to decimal: divide the top by the bottom:
example: $\frac{3}{4} = 3 \div 4 = 0.75$
example: $\frac{20}{3} = 20 \div 3 = 6.\overline{6}$
example: $3\frac{2}{5} = 3 + \frac{2}{5} = 3 + (2 \div 5)$
$$= 3 + .4 = 3.4$$

Problems 11-14: Write each as a decimal. If the decimal repeats, show the repeating block:

11. $\frac{5}{8} =$
12. $\frac{3}{7} =$
13. $4\frac{1}{3} =$
14. $\frac{3}{100} =$

Non-repeating decimals to fractions: say the number as a fraction, write the fraction you say; reduce if possible:
example: $.4 =$ four tenths $= \frac{4}{10} = \frac{2}{5}$
example: $3.76 =$ three and seventy six hundredths $= 3\frac{76}{100} = 3\frac{19}{25}$

Problems 15-18: Write as a fraction:

15. .01 =
16. .38 =
17. 4.9 =
18. 1.25 =

Comparison of fractions and decimals: usually it is easiest to convert fractions to decimals, then compare:
example: Arrange from small to large: $.3, \frac{2}{5}, .\overline{3}, \frac{2}{7}$

As decimals these are: .3, .4, .33333…, $.\overline{285714}…$
So the order is: $.\overline{285714}$, .3. $.\overline{3}$, .4, or $\frac{2}{7}$, .3, $.\overline{3}$, $\frac{2}{5}$

Problems 19-21: Arrange in order, small to large:

19. $\frac{2}{3}$, .6, .67, $.\overline{67}$ | 21. $\frac{1}{100}$, .01, $.00\overline{9}$, $\frac{5}{500}$

20. $\frac{7}{8}$, 0.87, $\frac{13}{16}$, 0.88

Adding and subtracting decimals: like places must be combined (line up the points):
example: $4 + .3 = 4.3$

example: $3.43 + .791 + 12$:
$$\begin{array}{r} 3.430 \\ .791 \\ \underline{12.000} \\ 16.221 \end{array}$$

example: $8 - 4.96$:
$$\begin{array}{r} 8.00 \\ \underline{-4.96} \\ 3.04 \end{array}$$

example: $6.04 - (2 - 1.4) = 6.04 - .6 = 5.44$

Problems 22-30: Calculate:

22. $5.4 + .78 =$
23. $1.36 - 0.63 =$
24. $4 - .3 + .001 - .01 + .1 =$
25. $\$3.54 - \$1.68 =$
26. $\$17 - \$10.50 =$
27. $17.5 - 10 =$
28. $4 + .3 + .02 + .001 =$
29. $8.3 - 0.92 =$
30. $4.7 + 47 + 0.47 =$

C. **Multiplying and dividing decimals:**

Multiplying decimals
example: $.3 \times .5 = .15$
example: $.3 \times .2 = .06$
example: $(.03)^2 = .0009$

31. $3.24 \times 10 =$ | 34. $5 \times 0.4 =$
32. $.01 \times .2 =$ | 35. $(.51)^2 =$
33. $(.04)^2 =$

Dividing decimals: Change the problem to an equivalent whole number problem by multiplying both numbers by the same power of 10:

example: $.3 \div .03$
    Multiply both by 100 to get $30 \div 3 = 10$
example: $\frac{.014}{.07}$
    Multiply both by 1000 to get $14 \div 70 = .2$

---

36. $.013 \div 100 =$ | 40. $\frac{7.20}{2.4} =$
37. $.053 \div .2 =$ | 41. $1.44 \div 2.4 =$
38. $\frac{340}{3.4} =$ | 42. $\frac{36.8}{10} =$
39. $\frac{8.4}{0.07} =$

D. **Percent:**

Meaning: translate percent as hundredths:
example: 8% means 8 hundredths or .08 or
$\frac{8}{100} = \frac{2}{25}$

Percent-decimal conversion: To change a decimal to percent form, multiply by 100 (move the point 2 places right), write the percent symbol (%):
example: $.075 = 7.5\%$
example: $1\frac{1}{4} = 1.25 = 125\%$

Problems 43-45: Write as a percent:

43. $.3 =$ | 44. $4 =$ | 45. $.085 =$

To change a percent to decimal form, move the point 2 places left (divide by 100) and drop the % symbol:
example: $8.76\% = .0876$
example: $67\% = .67$

Problems 46-49: Write as a decimal:

46. $10\% =$ | 48. $.03\% =$
47. $136\% =$ | 49. $4\% =$

Solving percent problems:
Step 1: Without changing the meaning, write the problems so it says "__ of __ is __", and from this, identify *a*, *b*, and *c*:

$$\boxed{a \ \% \ \text{of} \ b \ \text{is} \ c}$$

Problems 50-52: Write in the form *a*% of *b* is *c*, and tell the values of *a*, *b*, and *c*:

50. 3% of 40 is 1.2
51. 600 is 150% of 400
52. 3 out of 12 is 25%

Step 2: Given *a* and *b*, change *a*% to a decimal and multiply ("of" can be translated "multiply"). Or, given *c* and one of the others, divide *c* by the other (first change percent to decimal); if answer is *a*, write it as a percent:

example: What is 9.4% of $5000?
    Compare *a*% of *b* is *c*: 9.4% of $5000 is __?
    Given *a* and *b*: multiply:
    $.094 \times \$5000 = \$470$
example: 56 problems correct out of 80 is what percent?
    Compare *a*% of *b* is *c*: __% of 80 is 56?
    Given *c* and other (*b*):
    $56 \div 80 = .7 = 70\%$
example: 5610 people, which is 60% of the registered voters, vote in an election. How many are registered?
    Compare *a*% of *b* is *c*: 60% of __ is 5610?
    Given *c* and other (*a*): $5610 \div .6 = 9350$

53. 4% of 9 is what?
54. What percent of 70 is 56?
55. 15% of what is 60?
56. What is 43% of 500?
57. 10 is what percent of 40?

E. Estimation and approximation:

Rounding to one significant digit:
example: 3.67 rounds to 4
example: .0449 rounds to .04
example: 850 rounds to either 800 or 900
example: $.\overline{4} = .44444...$ rounds to .4

Problems 58-61: Round to one significant digit:

58. 45.01	60. .00083
59. 1.09	61. $0.\overline{5}$

To <u>estimate</u> an answer, it is often sufficient to round each given number to one significant digit, then compute:

example: $.0298 \times .000513$ Round and compute:
  $.03 \times .0005 = .000015$
    .000015 is the estimate

Problems 62-66: Select the best approximation of the answer:

62. $1.2346825 \times 367.003246 = (4, 40, 400, 4000, 40000)$

63. $.0042210398 \div .01904982 = (.02, .2, .5, 5, 20, 50)$
64. $101.7283507 + 3.14159265 = (2, 4, 98, 105, 400)$
65. $(4.36285903)^3 = (12, 64, 640, 5000, 12000)$
66. $1.147 - 114.7 = (-100, -10, 0, 10, 100)$

Word Problems:

Problems 67-69: A cassette which cost $9.50 last year costs $11 now.

67. What is the amount of the increase?
68. What percent of the original price is the increase?
69. What is the percent increase?

Problems 70-71: Jodi's weekly pay is $89.20. She gets a 5% raise.

70. What will be her new weekly pay?
71. How much more will she get?

Problems 72-74: Sixty percent of those registered voted in the last election.

72. What fraction voted?
73. If there was 45,000 registered, how many voted?
74. If 33,000 voted, how many were registered?

75. A person weighs 125 pounds. Their ideal weight is 130 pounds. Their actual weight is what percent of their ideal weight?

Answers:

1. .7
2. .03
3. .2
4. 1.9
5. .5
6. .0085, .02, .19, .2
7. .449, .45, .451, .5
8. 4.49, 4.5, 5.4, 5.41
9. .34, .$\overline{3}$,.3
10. .6$\overline{7}$, .$\overline{67}$, .67, .$\overline{6}$, .6
11. .625
12. .$\overline{428571}$
13. 4.$\overline{3}$
14. .03
15. $\frac{1}{100}$
16. $\frac{19}{50}$
17. $4\frac{9}{10} = \frac{49}{50}$
18. $1\frac{1}{4} = \frac{5}{4}$
19. .6, $\frac{2}{3}$, .67, .$\overline{67}$
20. $\frac{13}{16}$, .87, $\frac{7}{8}$, .88

21. all equal $\frac{1}{100}$
22. 6.18
23. .73
24. 3.791
25. $1.86
26. $6.50
27. 7.5
28. 4.321
29. 7.38
30. 52.17
31. 32.4
32. .002
33. .0016
34. 2
35. .2601
36. .00013
37. .265
38. 100
39. 120
40. 3
41. .6
42. 3.68

43. 30%
44. 400%
45. 8.5%
46. .1
47. 1.36
48. .0003
49. .04
50. 3% of 40 is   1.2;
    $a = 3\%, b = 40, c = 1.2$
51. 150% of 400 is 600;
    $a = 150\%, b = 400, c = 600$
52. 25% of 12 is 3;
    $a = 25\%, b = 12, c = 3$
53. .36
54. 80%
55. 400
56. 215
57. 25%
58. 50
59. 1
60. .0008
61. .6

62. 400	67. $1.50	72. $\frac{3}{5}$
63. .2	68. $\approx 15.8\%$	73. 27,000
64. 105	69. $\approx 15.8\%$	74. 55,000
65. 64	70. $93.66	75. $\approx 96\%$
66. –100	71. $4.46	

TOPIC 4: EXPONENTS

A. Positive integer exponents:

> Meaning of exponents:
> *example:* $3^4 = 3 \times 3 \times 3 \times 3$
> $= 3 \bullet 3 \bullet 3 \bullet 3 = 81$
> *example:* $4^3 = 4 \bullet 4 \bullet 4 = 64$

Problems 1-12: Find the value:

1. $3^2 =$	7. $(-2)^3 =$
2. $2^3 =$	8. $100^2 =$
3. $(-3)^2 =$	9. $(2.1)^2 =$
4. $-(3)^2 =$	10. $(-.1)^3 =$
5. $-3^2 = -(3^2) =$	11. $\left(\frac{2}{3}\right)^3 =$
6. $-2^3 =$	12. $\left(-\frac{2}{3}\right)^3 =$

> a^b means use a as a factor b times. (b is the exponent or power of a)
> *example:* 2^5 means $2 \bullet 2 \bullet 2 \bullet 2 \bullet 2$
> 2^5 has a value 32
> 5 is the exponent or power
> 2 is the factor
> *example:* $5 \bullet 5$ can be written 5^2. Its value is 25.
> *example:* $4^1 = 4$

Problems 13-24: Write the meaning and find the value:

13. $6^3 =$	19. $(0.1)^4 =$
14. $(-4)^2 =$	20. $\left(\frac{2}{3}\right)^4 =$
15. $0^4 =$	21. $\left(1\frac{1}{2}\right)^2 =$
16. $7^1 =$	22. $2^{10} =$
17. $1^4 =$	23. $(.03)^2 =$
18. $(-1)^3 =$	24. $3^2 \bullet 2^3 =$

> *example:* $\frac{8}{2^4} = \frac{8}{16} = \frac{1}{2}$
> *example:* $\frac{6^3}{6^2} = \frac{216}{36} = 6$

Problems 25-30: Simplify:

25. $\frac{6}{3^2} =$	28. $\frac{10}{4^2 \bullet 5} =$
26. $\frac{2^5}{8} =$	29. $\frac{2^3 \bullet 2^4}{2^5 \bullet 2} =$
27. $\frac{4 \bullet 5}{10} =$	30. $\frac{5 \bullet 12}{6^2 \bullet 10} =$

Problems 31-38: Find the value:

31. $3^2 + 4^2 =$	35. $(3.1)^2 - (.03)^2 =$
32. $5^2 =$	36. $(3.1)^2 + (.03)^2 =$
33. $3^2 + 4^2 + 12^2 =$	37. $3^3 + 4^3 + 5^3 =$
34. $13^2 =$	38. $6^3 =$

B. Integer exponent laws:

Problems 39-40: Write the meaning (not the value):

39. $3^2 =$	40. $3^4 =$

41. Write as a power of 3: $3 \bullet 3 \bullet 3 \bullet 3 \bullet 3 \bullet 3 =$
42. Write the meaning: $3^2 \bullet 3^4 =$
43. Write your answer to 42 as a power of 3, then find the value.
44. Now find each value and solve: $3^2 \bullet 3^4 =$
45. So $3^2 \bullet 3^4 = 3^6$. Circle each of the powers. Note how the circled numbers are related.
46. How are they related?

Problems 47-52: Write each expression as a power of the same factor:

> *example:* $3^2 \bullet 3^4 = 3^6$

47. $4^1 \bullet 4^2 =$	50. $(-1)^5 \bullet (-1)^4 =$
48. $5^3 \bullet 5^3 =$	51. $10 \bullet 10^4 =$
49. $3^3 \bullet 3 =$	52. $10 \bullet 10 =$

53. Make a formula by filling in the brackets:
$a^b \bullet a^c = a^{[\ \ ]}$. This is an exponent rule.

Problems 54-56: Find the value:

| 54. $3^6 =$ | 55. $3^4 =$ | 56. $729 \div 81 =$ |

> *note:* $3^6 \div 3^4 = \frac{3^6}{3^4} = \frac{3 \bullet 3 \bullet 3 \bullet 3 \bullet 3 \bullet 3}{3 \bullet 3 \bullet 3 \bullet 3}$
> $= \frac{3}{3} \bullet \frac{3}{3} \bullet \frac{3}{3} \bullet \frac{3}{3} \bullet 3 \bullet 3 = 1 \bullet 1 \bullet 1 \bullet 1 \bullet 3 \bullet 3 = 3^2$

57. Circle the exponents: $\frac{3^6}{3^4} = 3^2$
58. How are the circled numbers related?

Problems 59-63: Write each expression as a power:

> *example:* $\frac{3^6}{3^4} = 3^2$

| 59. $2^4 \div 2^4 =$ | 60. $\frac{2^5}{2} =$ |

61. $\frac{5^2}{5} =$

62. $\frac{(-4)^7}{(-4)^2} =$

63. $\frac{1^5}{1^3} =$

64. Make a formula by filling in the brackets:
$\frac{a^b}{a^c} = a^{[\quad]}$. This is another exponent rule.

Problems 65-67: Find each value:

65. $4^3 =$

66. $4^6 =$

67. $\left(4^3\right)^2 = (64)^2 =$

Problems 68-69: Write the meaning of each expression:

example: $\left(4^3\right)^2 = 4^3 \bullet 4^3 = 4\bullet4\bullet4 \bullet 4\bullet4\bullet4$
$\qquad = 4\bullet4\bullet4\bullet4\bullet4\bullet4 = 4^6$

68. $\left(3^2\right)^4 =$

69. $\left(5^1\right)^3 =$

70. Circle the three exponents: $\left(4^3\right)^2 = 4^6$

71. What is the relation of the circled numbers?

72. Make a rule: $\left(a^b\right)^c = a^{[\quad]}$

73. Write your three exponent rules below:
    I. $a^b \bullet a^c =$
    II. $\frac{a^b}{a^c} =$
    III. $\left(a^b\right)^c =$

Problems 74-80: Use the rules to write each expression as a power of the factor, and tell which rule you're using:

74. $3^4 \bullet 3^6 =$

75. $\frac{2^{10}}{2^5} =$

76. $\left(2^5\right)^2 =$

77. $\left(3^4\right)^4 =$

78. $\frac{3^4}{3} =$

79. $\left(5^1\right)^2 =$

80. $10^4 \bullet 10^3 =$

C. Scientific notation:
Note that scientific form always looks like $a \times 10^n$, where $1 \le a < 10$, and n is an integer power of 10.

example: $32800 = 3.2800 \times 10^4$ if the zeros in the ten's and one's places are significant. If the one's zero is not significant, write: 3.280×10^4; if neither is significant: 3.28×10^4.
example: $.0040301 = 4.031 \times 10^{-3}$
example: $2 \times 10^2 = 200$
example: $9.9 \times 10^{-1} = .99$

Problems 81-84: Write in scientific notation:

81. $93,000,000 =$

82. $.000042 =$

83. $5.07 =$

84. $-32 =$

Problems 85-87: Write in standard notation:

85. $1.4030 \times 10^3 =$

86. $9.11 \times 10^{-2} =$

87. $4 \times 10^{-6} =$

To compute with numbers written in scientific form, separate the parts, compute, then recombine:

example: $\left(3.14 \times 10^5\right)(2)$
$\qquad = (3.14)(2) \times 10^5 = 6.28 \times 10^5$
example: $\frac{4.28 \times 10^6}{2.14 \times 10^2} = \frac{4.28}{2.14} \bullet \frac{10^6}{10^2} = 2.00 \times 10^4$

Problems 88-95: Write answer in scientific notation:

88. $10^{40} \times 10^2 =$

89. $\frac{10^{40}}{10^{10}} =$

90. $\frac{1.86 \times 10^4}{3 \times 10} =$

91. $\frac{3.6 \times 10^5}{1.8 \times 10^3} =$

92. $\frac{1.8 \times 10^8}{3.6 \times 10^5} =$

93. $\left(4 \times 10^3\right)^2 =$

94. $\left(1.5 \times 10^2\right) \times \left(5 \times 10^3\right) =$

95. $\left(1.25 \times 10^2\right)\left(4 \times 10^{-2}\right) =$

D. Square roots or perfect squares:
$\sqrt{a} = b$ means $b^2 = a$, where $b \ge 0$. Thus $\sqrt{49} = 7$, because $7^2 = 49$. Also, $-\sqrt{49} = -7$.
Note: $\sqrt{49}$ does *not* equal -7, (even though $(-7)^2$ *does* $= 49$) because -7 is not ≥ 0.

example: If $\sqrt{a} = 10$, then $a = 100$, because $10^2 = a = 100$

Problems 96-99: Find the value and tell why:

96. If $\sqrt{a} = 5$ then $a =$

97. If $\sqrt{x} = 4$, then $x =$

98. If $\sqrt{36} = b$, then $b =$

99. If $\sqrt{169} = y$, then $y =$

Problems 100-110: Find the value:

100. $\sqrt{81} =$

101. $8^2 =$

102. $\sqrt{8^2} =$

103. $\sqrt{(-7)^2} =$

104. $\sqrt{6^2 + 8^2} =$

105. $\sqrt{3^2 + 4^2} =$

106. $\sqrt{3^2 + 4^2 + 12^2} =$

107. $\sqrt{17^2 - 15^2} =$

108. $\sqrt{13^2 - 12^2} =$

109. $\sqrt{4^3} =$

110. $\sqrt{3^4} =$

Answers:

1. 9
2. 8
3. 9
4. –9
5. –9
6. –8
7. –8
8. 10,000
9. 4.41
10. –.001
11. $\frac{8}{27}$
12. $-\frac{8}{27}$
13. $6 \cdot 6 \cdot 6 = 216$
14. $(-4)(-4) = 16$
15. $0 \cdot 0 \cdot 0 \cdot 0 = 0$
16. $7 = 7$
17. $1 \cdot 1 \cdot 1 \cdot 1 = 1$
18. $(-1)(-1)(-1) = -1$
19. $(.1)(.1)(.1)(.1)$
    $= .0001$
20. $\frac{2}{3} \cdot \frac{2}{3} \cdot \frac{2}{3} \cdot \frac{2}{3} = \frac{16}{81}$
21. $\frac{3}{2} \cdot \frac{3}{2} = \frac{9}{4} = 2\frac{1}{4}$
22. $2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$
    $\cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2$
    $= 1024$
23. $(.03)(.03) = .0009$
24. $3 \cdot 3 \cdot 2 \cdot 2 \cdot 2 = 72$
25. $\frac{2}{3}$
26. 4
27. 2
28. $\frac{1}{8}$
29. 2
30. $\frac{1}{6}$
31. 25
32. 25
33. 169
34. 169
35. 9.6091
36. 9.6109
37. 216
38. 216

39. $3 \cdot 3$
40. $3 \cdot 3 \cdot 3 \cdot 3$
41. 3^6
42. $3 \cdot 3 \cdot 3 \cdot 3 \cdot 3 \cdot 3$
43. $3^6 = 729$
44. $9 \cdot 81 = 729$
45. $3^{(2)} \cdot 3^{(4)} = 3^{(6)}$
46. $2 + 4 = 6$
47. 4^3
48. 5^6
49. 3^4
50. $(-1)^9$
51. 10^5
52. 10^2
53. $a^b \cdot a^c = a^{[b+c]}$
54. 729
55. 81
56. 9
57. $\frac{3^{(6)}}{3^{(4)}} = 3^{(2)}$
58. $6 - 4 = 2$
59. 2^0
60. 2^4
61. 5^1
62. $(-4)^5$
63. 1^2 (or any power of 1)
64. $\frac{a^b}{a^c} = a^{[b-c]}$
65. 64
66. 4096
67. 4096
68. $3^2 \cdot 3^2 \cdot 3^2 \cdot 3^2$
69. $5 \cdot 5 \cdot 5$
70. $\left(4^{(3)}\right)^{(2)} = 4^{(6)}$
71. $3 \times 2 = 6$
72. $\left(a^b\right)^c = a^{[bc]}$
73. I. $a^b \cdot a^c = a^{b+c}$
    II. $\frac{a^b}{a^c} = a^{b-c}$
    III. $\left(a^b\right)^c = a^{bc}$

74. 3^{10}, rule I
75. 2^5, rule II
76. 2^{10}, rule III
77. 3^{16}, rule III
78. 3^3, rule II
79. 5^2, rule III
80. 10^7, rule I
81. 9.3×10^7
82. 4.2×10^{-5}
83. 5.07
84. -3.2×10
85. 1403.0
86. 0.0911
87. .000004
88. 10^{42}
89. 10^{30}
90. 6.2×10^2
91. 2.0×10^2
92. 5.0×10^2
93. 1.6×10^7
94. 7.5×10^5
95. 5
96. 25; $5^2 = 25$
97. 16; $4^2 = 16$
98. 6; $6^2 = 36$
99. 13; $13^2 = 169$
100. 9
101. 64
102. 8
103. 7
104. 10
105. 5
106. 13
107. 8
108. 5
109. 8
110. 9

TOPIC 5: EQUATIONS and EXPRESSIONS

A. Operations with literal symbols (letters):
When letters are used to represent numbers, *addition* is shown with a "plus sign" (+), and *subtraction* with a "minus sign" (–).

Multiplication is often show by writing letters together:
example: ab means *a* times *b* So do
$a \cdot b$, $a \times b$, and $(a)(b)$
example: $7 \cdot 8 = 7 \times 8 = (7)(8)$