

Lambrick Park
Secondary School

Math 9

Final Exam Review

Package

2018-2019

KEY

Name: _____

Math 9 Final Exam REVIEW

Key1. In the expression $-6^3 = -216$, the base is....

- a. 6
 b. -6

- c. 3
d. -216

no brackets
so base is 6

2. Which of the following is equal to 1?

- a. $4 \times 2^0 = 4 \times 1 = 4$
b. $-4 \times 2^0 = -4 \times 1 = -4$

- c. $(4 \times 2)^0 = 8^0 = 1$
d. $-(4 \times 2)^0 = -(8)^0 = -1$

3. Simplify: $(x^6 \cdot x^4)^2 = (x^{10})^2 = x^{20}$

- a. x^{12}
 b. x^{20}

- c. x^{26}
d. x^{48}

4. Simplify: $\frac{x^{20}}{x^{-10}}$ $20 - (-10) = 20 + 10 = 30$

- a. x^{20}
b. x^{10}

x^{30}

- c. x^{30}
d. x^2

5. Simplify: $\left(\frac{x^0}{x^6}\right)^{-2}$ $0 - 6 = -6$
 $(x^{-6})^{-2} = x^{12}$

- a. x^{12}
b. x^{-12}

- c. x^{10}
d. x^{-10}

6. Evaluate 3^{-2} without using a calculator.

a. $\sqrt{3}$

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

c. $\frac{1}{9}$

d. 9

$3^{-2} = \frac{1}{3^2} = \left(\frac{1}{9}\right)$

7. Evaluate $\left(\frac{2}{3}\right)^{-3} = \left(\frac{3}{2}\right)^3 = \frac{3^3}{2^3} = \frac{27}{8}$

a. $-\frac{27}{8}$

b. $-\frac{8}{27}$

c. $\frac{27}{8}$

d. $-\frac{1}{6}$

8. Which power with a negative exponent is equivalent to $\frac{1}{125}$? $= \frac{1}{5^3} = 5^{-3}$

a. 5^{-3}

b. -5^{-3}

c. 3^{-5}

d. $(-5)^3$

9. Simplify $(3^2)^{-3} = 3^{-6} = \frac{1}{3^6}$

a. -3^6

b. $\frac{1}{3^6}$

c. $\frac{1}{3^6}$

d. 3^6

$$10. \text{ Evaluate } \left(-\frac{1}{2}\right)^{-4} \times \left(-\frac{1}{2}\right)^2 = \left(-\frac{1}{2}\right)^{-2} = \left(-\frac{2}{1}\right)^2 = \frac{(-2)^2}{1^2} = \frac{4}{1} = 4$$

a. $-\frac{1}{4}$

c. 2

b. $-\frac{1}{2}$

d. 4

$$11. \text{ Evaluate } \left(\frac{2}{3}\right)^3 \times \left(\frac{2}{3}\right)^2 = \left(\frac{2}{3}\right)^5 = \frac{2^5}{3^5} = \frac{32}{243}$$

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

c. $\frac{32}{243}$

b. $\frac{8}{27}$

d. $\frac{1024}{59049}$

12. $4^0 = 1$

13. $-4^0 = -1$ (4 is the base) so $-(4^0) = -1$

14. $(4 \times 6)^0 = (24)^0 = 1$

15. $-4^0 - 6^0 = -1 - 1 = -2$

16. $(-4)^0 + (-6)^0 = 1 + 1 = 2$

17. $-\left(\frac{4}{5}\right)^0 = -1$

18. Multiply and simplify. Leave answer in exponential form.

$4^5 \times 4^3 = 4^8$ (add exponents)

19. Multiply and simplify. Leave answer in exponential form.

$5^4 \times 5^3 \times 5^1 = 5^8$ (add exponents)

20. Multiply and simplify. Leave answer in exponential form.

$(-6)^4 \times (-6)^2 \times (-6)^0 = (-6)^6$ (add exponents)

21. Divide and simplify. Leave answer in exponential form.

$\frac{4^3}{4^2} = 4^1 = 4$ (subtract exponents)

22. Divide and simplify. Leave answer in exponential form.

$$\frac{(-2)^5}{(-2)^2} = (-2)^3 \quad (\text{subtract exponents})$$

23. Divide and simplify. Leave answer in exponential form.

$$\frac{4^9 \times 3^6}{4^2 \times 3^2} = 4^7 \times 3^4 \quad (\text{subtract exponents})$$

24. Simplify and leave answer in exponential form.

$$\frac{2^7 \times 2^3}{2^6} = \frac{2^{10}}{2^6} = 2^4$$

25. Simplify and leave answer in exponential form.

$$\frac{(-7)^4 \times (-7)^5}{(-7)^3 \times (-7)^2} = \frac{(-7)^9}{(-7)^5} = (-7)^4$$

26. Simplify and leave answer in exponential form.

$$\frac{10^1 \times 10^7 \times 10^4}{10^6 \times 10^5} = \frac{10^{12}}{10^{11}} = 10^1 = 10$$

$$27. 3^7 \div (3^4 \div 3) \div 3^2 = (3^7 \div 3^3) \div 3^2 = 3^4 \div 3^2 = (3^2 = 9)$$

$$28. (6^9 \div 6^5) \times 6 \div 6^3 = (6^4 \times 6) \div 6^3 = 6^5 \div 6^3 = 6^2 = 36$$

29. Solve for x:

$$64 = 2^x \quad 2^6 = 64 \quad \text{so } x = 6$$

30. Will the answer be positive or negative?
- $a < 0$

$$-a^{50} \quad \text{negative is not part of the base} \quad \text{NEGATIVE}$$

31. Will the answer be positive or negative?
- $a < 0$

$$(-a)^{50} \quad \text{negative is part of the base, exponent is even} \quad \text{so 50 negs = positive} \quad \text{POSITIVE}$$

32. Write
- $6 \times 6 \times 6 \times 6 \times 6$
- in exponential notation.

$$6^5$$

33. Write
- $-6 \times -6 \times -6 \times -6$
- in exponential notation.

$$(-6)^4$$

34. Evaluate:
- $3^4 = 81$

35. Evaluate:
- $(-3)^5 = -243$

36. Evaluate: $-(-5)^2$ $\overset{-5 \times -5}{(-5)^2 = 25}$ so $-(-5)^2 = \boxed{-25}$
37. Evaluate: -6^2 $-6 \times 6 = \boxed{-36}$
38. Write as a product of repeat factors: $(-6)^3 = (-6)(-6)(-6)$
39. Write as a product of repeat factors: $-(-a)^4 = -(-a)(-a)(-a)(-a)$
40. $4 \times 3^2 = 4 \times 9 = \boxed{36}$
41. $(4 \times 3)^2 = 12^2 = (12)(12) = \boxed{144}$
42. $-7 - 4^2 = -7 - 16 = \boxed{-23}$
43. $(2^5 + 2^2)(2^6 + 2^3) = (2^3)(2^3) = \boxed{2^6 = 64}$
44. $12 + 3[(20 - 4) - 2 + 3^4] = 12 + 3[16 - 2 + 3^4] = 12 + 3[16 - 2 + 81] = 12 + 3[14 + 81] = 12 + 3[95] = 12 + 285 = \boxed{297}$
45. $\frac{(-2)^3 + 4^2}{2 - 5^2 + 3 \times 4} = \frac{4 + 16}{2 - 25 + 3 \times 4} = \frac{4 + 16}{2 - 25 + 12} = \frac{20}{-23 + 12} = \frac{20}{-11} = \boxed{\frac{20}{-11}}$
46. Simplify $\left(\frac{1^9}{3^4}\right)^2 \cdot \left(\frac{9^5}{2}\right)^3 = \frac{1^2}{3^2} \cdot \frac{9^3}{2^3} = \frac{1}{9} \cdot \frac{729}{8} = \frac{729^{\frac{1}{9}}}{72^{\frac{1}{4}}} = \boxed{\frac{81}{8}}$
47. Evaluate $(-4)^{-4}$ without using a calculator. $= \frac{1}{(-4)^4} = \boxed{\frac{1}{256}}$
48. Which of the following numbers is irrational?
 a. $\sqrt{6} = \boxed{2.449489743...}$
 b. $\sqrt{9} = \boxed{3}$
 c. $\sqrt{25} = \boxed{5}$
 d. $\sqrt{\frac{5^5}{125^5}} = \sqrt{\frac{1}{25}} = \frac{\sqrt{1}}{\sqrt{25}} = \boxed{\frac{1}{5}}$
49. $(\sqrt{4}) + (\sqrt{81}) = 2 + 9 = \boxed{11}$
50. $\sqrt{64} = 8$
51. $\sqrt{0} = 0$
52. $\sqrt{-4} = \text{no answer!}$

$$53. \sqrt{\frac{1}{9}} = \frac{\sqrt{1}}{\sqrt{9}} = \left(\frac{1}{3}\right)$$

$$54. \sqrt{\frac{4}{25}} = \frac{\sqrt{4}}{\sqrt{25}} = \left(\frac{2}{5}\right)$$

$$55. \sqrt{0.0625} = 25 \times 25 = 625, \text{ so } \underset{4}{0.25} \times \underset{4}{0.25} = \underset{4}{0.0625} \text{ so } \sqrt{0.0625} = \left(0.25\right)$$

56. Simplify, if possible.

$$-\sqrt{\frac{12 \div 3}{48 \div 3}} = -\sqrt{\frac{4 \div 4}{16 \div 4}} = -\sqrt{\frac{1}{4}} = \frac{-\sqrt{1}}{\sqrt{4}} = \left(\frac{-1}{2}\right) \text{ OR } -\sqrt{\frac{12 \div 12}{48 \div 12}} = -\sqrt{\frac{1}{4}} = -\frac{\sqrt{1}}{\sqrt{4}} = \left(\frac{-1}{2}\right)$$

$$57. \sqrt{0.64} = 0.8 \text{ because } \underset{2}{0.8} \times \underset{2}{0.8} = \underset{2}{0.64}$$

$$58. \left(\sqrt{36}\right) - \left(\sqrt{16}\right) = 6 - 4 = \left(-10\right)$$

59. Define rational number. A number that can be written as a fraction

60. Define irrational number. A number that cannot be written as a fraction.

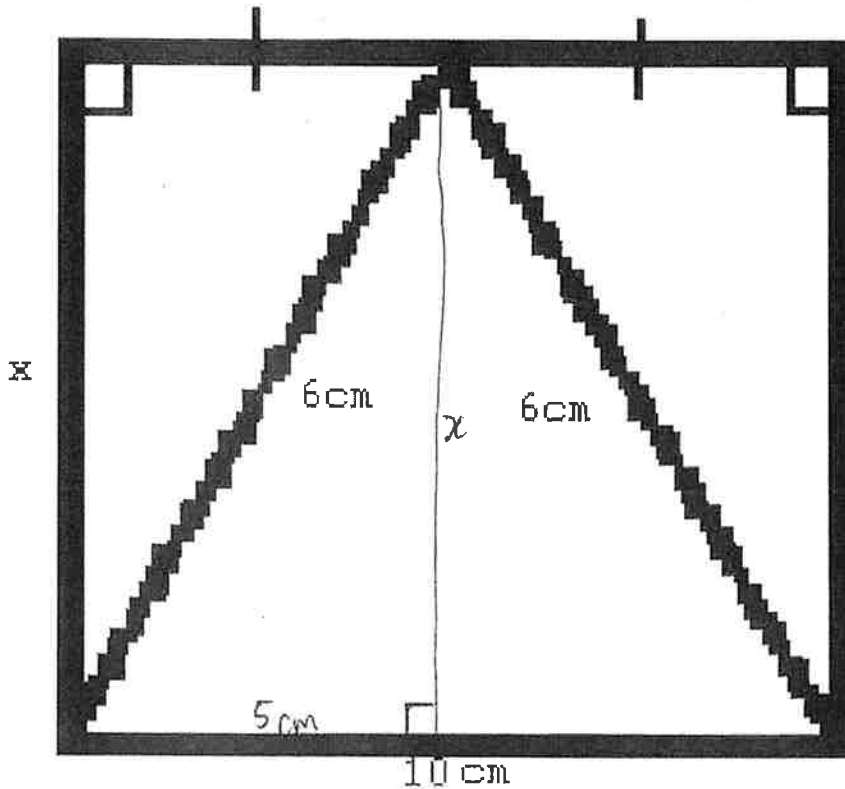
61. Without using a calculator, determine the square root of the following irrational number to one decimal place.

$$\sqrt{63} \quad \begin{array}{r} \sqrt{49} \\ 7 \end{array} \quad \begin{array}{r} \sqrt{63} \\ 7.9 \end{array} \quad \begin{array}{r} \sqrt{64} \\ 8 \end{array}$$

62. Without using a calculator, determine the square root of the following irrational number to one decimal place.

$$\sqrt{98} \quad \begin{array}{r} \sqrt{81} \\ 9 \end{array} \quad \begin{array}{r} \sqrt{98} \\ 9.9 \end{array} \quad \begin{array}{r} \sqrt{100} \\ 10 \end{array}$$

63. Find the measure of x.



$$a^2 + b^2 = c^2$$

$$x^2 + (5^2) = (6^2)$$

$$x^2 + 25 = 36$$

$$-25 \quad -25$$

$$x^2 = 11$$

$$x = \sqrt{11}$$

$$x = 3.3 \text{ cm}$$

64. A baseball diamond is 120 ft on each side (from base to base). How far is it from second base to home plate?

65. Which of the following represents these rational numbers in ascending order?

$$\frac{6}{7}, 0.8, 0.\bar{6}, \frac{13}{14}$$

$$0.957, 0.8, 0.\bar{6}, 0.929$$

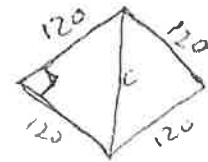
a. $0.\bar{6}, 0.8, \frac{6}{7}, \frac{13}{14}$

b. $\frac{6}{7}, 0.8, 0.\bar{6}, \frac{13}{14}$

$$0.\bar{6}, 0.8, \frac{6}{7}, \frac{13}{14}$$

c. $0.\bar{6}, \frac{6}{7}, 0.8, \frac{13}{14}$

d. $\frac{13}{14}, \frac{6}{7}, 0.8, 0.\bar{6}$



$$a^2 + b^2 = c^2$$

$$(120)^2 + (120)^2 = c^2$$

$$14400 + 14400 = c^2$$

$$28800 = c^2$$

$$c = \sqrt{28800}$$

$$c = 169.7 \text{ ft}$$

66. Order the rational numbers in descending order.

$$1\frac{3}{8}, -3\frac{1}{3}, 1\frac{15}{16}, -1\frac{10}{11}$$

$$1\frac{15}{16}, 1\frac{3}{8}, -1\frac{10}{11}, -3\frac{1}{3}$$

a. $-3\frac{1}{3}, -1\frac{10}{11}, 1\frac{15}{16}, 1\frac{3}{8}$

c. $1\frac{3}{8}, -3\frac{1}{3}, -1\frac{10}{11}, 1\frac{15}{16}$

b. $1\frac{15}{16}, 1\frac{3}{8}, -1\frac{10}{11}, -3\frac{1}{3}$

d. $1\frac{3}{8}, 1\frac{15}{16}, -1\frac{10}{11}, -3\frac{1}{3}$

67. Which of the following sequences represents the numbers below written in descending order?

$\frac{8}{13}, 0.7, 0.\bar{13}, \frac{7}{8}$
 0.615 0.875

$\frac{7}{8}, 0.7, \frac{8}{13}, 0.\bar{13}$

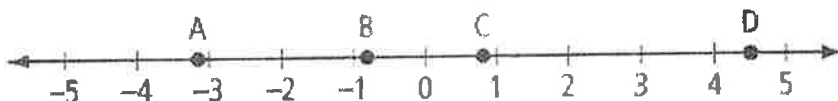
a. $0.\bar{13}, 0.7, \frac{7}{8}, \frac{8}{13}$

c. $\frac{8}{13}, 0.7, \frac{7}{8}, 0.\bar{13}$

b. $\frac{8}{13}, \frac{7}{8}, 0.\bar{13}, 0.7$

d. $\frac{7}{8}, 0.7, \frac{8}{13}, 0.\bar{13}$

68. Which point on the number line represents the rational number $\frac{4}{5}$?

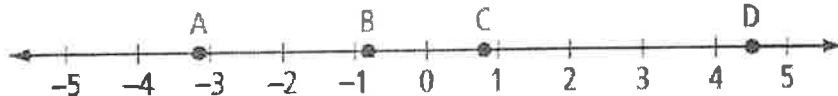


- a. A
b. B

- c. C
d. D

$\frac{4}{5} = 0.8$
between 0 and 1

69. Which point on the number line represents the rational number $\frac{18}{4}$?



- a. A
b. B

- c. C
d. D

$\frac{18}{4} = 4\frac{2}{4} = 4\frac{1}{2}$

70. Which fraction is equivalent to $\frac{5}{30}$?

- a. $\frac{6}{10}$
b. $\frac{1}{5}$

- c. $\frac{1}{6}$
d. $\frac{2}{15}$

$\frac{5 \div 5}{30 \div 5} = \frac{1}{6}$

71. Determine the mixed number that falls between 1.2 and 1.3.

- a. $1\frac{4}{5} = 1.80$
b. $1\frac{3}{4} = 1.75$

- c. $1\frac{1}{4} = 1.25$
d. $1\frac{1}{5} = 1.20$

1.20 and 1.30

72. What is the value of $(-5.6) \div 2.0 - (-3.4) \times 1.7$?

- a. 1.02
b. 2.12

- c. 2.98
d. 3.58

$-2.8 - (-5.78)$
 $= -2.8 + 5.78$
 $= 2.98$

73. What is $\frac{20}{27} \div \frac{5}{9}$? = $\frac{20^{2 \times 5}}{27^{2 \times 3}} \times \frac{9^{2 \times 3}}{5^{2 \times 3}} = \frac{4}{3} \times \frac{1}{1} = \left(\frac{4}{3}\right)$

- a. $\frac{3}{2}$
 (b) $\frac{4}{3}$
 c. $\frac{3}{4}$
 d. $\frac{2}{3}$

74. Calculate $\frac{6^{2 \times 2}}{21^{2 \times 3}} \times \frac{3^{2 \times 3}}{2^{2 \times 3}} = \frac{3}{7} \times \frac{1}{1} = \left(\frac{3}{7}\right)$

- a. $\frac{3}{19}$
 b. $\frac{3}{14}$
 (c) $\frac{3}{7}$
 d. $\frac{1}{3}$

75. Evaluate $\frac{4}{9} + \left(\frac{1}{6} \times \frac{2}{3}\right) = \frac{4}{9} + \frac{2}{18} = \frac{4}{9} + \frac{1}{9} = \left(\frac{5}{9}\right)$

- (a) $\frac{5}{9}$
 b. $\frac{11}{18}$
 c. $\frac{7}{9}$
 d. $\frac{5}{6}$

76. What is $\left(\frac{6^{2 \times 2}}{7^{2 \times 3}} - \frac{1}{2}\right) \times \frac{14}{15}$? = $\left(\frac{12}{14} - \frac{7}{14}\right) \times \frac{14}{15} = \frac{5^{1 \times 5}}{14^{2 \times 3}} \times \frac{14^{2 \times 3}}{15^{2 \times 3}} = \frac{1}{1} \times \frac{1}{3} = \left(\frac{1}{3}\right)$

- (a) $\frac{1}{3}$
 b. $\frac{3}{5}$
 c. $\frac{14}{15}$
 d. $\frac{45}{15}$

77. Evaluate $\frac{11}{21} + \frac{1^{2 \times 7}}{3^{2 \times 7}} = \frac{11}{21} + \frac{7}{21} = \frac{18}{21} = \left(\frac{6}{7}\right)$

- a. $\frac{13}{14}$
 (b) $\frac{6}{7}$
 c. $\frac{3}{4}$
 d. $\frac{2}{3}$

78. What is the result of $\frac{5^{2 \times 2}}{9^{2 \times 2}} - \frac{1^{2 \times 3}}{6^{2 \times 3}}$

- a. $\frac{23}{54}$
 b. $\frac{5}{12}$
 $\frac{10}{18} - \frac{3}{18} = \left(\frac{7}{18}\right)$
 (c) $\frac{7}{18}$
 d. $\frac{13}{36}$

79. What is $\frac{2}{5} \times \left(\frac{2}{3} + \frac{1}{8}\right) \div \frac{8}{15}$? $= \frac{2}{5} \times \left(\frac{16}{24} + \frac{3}{24}\right) \div \frac{8}{15}$ $\left(\frac{2}{5} \times \frac{19}{24}\right) \div \frac{8}{15}$ $= \frac{19}{60} \times \frac{15}{8}$ $\frac{19}{32}$

a. $\frac{15}{52}$ c. $\frac{19}{32}$
 b. $\frac{23}{50}$ d. $\frac{29}{40}$

80. Written as an improper fraction, $2\frac{3}{4}$ is $\frac{11}{4}$

81. Written as a mixed number, $-\frac{17}{5}$ is $-3\frac{2}{5}$

82. $15n = 105$
 a. 1575
 b. 120
 c. 90
 d. 7

*Handwritten work: $15n = 105$
 $n = 7$*

83. $2t - 1 = 19$
 a. -9
 b. 10
 c. -10
 d. 9

*Handwritten work: $2t - 1 = 19$
 $2t = 20$
 $t = 10$*

84. $7x - 4x - 3 = 24$
 a. 9
 b. -9
 c. 7
 d. -7

*Handwritten work: $7x - 4x - 3 = 24$
 $3x - 3 = 24$
 $3x = 27$
 $x = 9$*

85. If $x + 2x + 4x = -14$, then $x =$
 a. -2
 b. $-\frac{7}{4}$
 c. -1
 d. $\frac{7}{4}$

*Handwritten work: $x + 2x + 4x = -14$
 $7x = -14$
 $x = -2$*

86. $3(x + 1) = 12$
 a. 3
 b. 4
 c. 6
 d. 8

*Handwritten work: $3(x + 1) = 12$
 $3x + 3 = 12$
 $3x = 9$
 $x = 3$*

87. Solve: $\frac{2}{3}x - 5 = \frac{x}{4} - 10$
 a. -12
 b. 12
 c. -1
 d. -2

*Handwritten work: $\frac{2}{3}x - 5 = \frac{x}{4} - 10$
 $(12) \cdot \frac{2}{3}x - 5(12) = (12) \cdot \frac{x}{4} - 10(12)$
 $8x - 60 = 3x - 120$
 $5x = -60$
 $x = -12$*

88. If $\frac{p}{3} + 4 = 7$ then $p =$
 a. 0
 b. 4
 c. 6
 d. 9

*Handwritten work: $\frac{p}{3} + 4 = 7$
 $\frac{p}{3} = 3$
 $p = 9$*

89. Solve for x : $x + 4 = -8$
 a. -12
 b. -4
 c. 4
 d. -8

*Handwritten work: $x + 4 = -8$
 $x = -12$*

90. Solve for x:

$$\frac{x}{5} + \frac{1}{4} = \frac{7}{20}$$

$$\frac{x}{5} + \frac{1}{4} = \frac{7}{20}$$

$$\frac{x}{5} = \frac{7}{20} - \frac{1}{4}$$

$$\frac{x}{5} = \frac{7}{20} - \frac{5}{20}$$

$$\frac{x}{5} = \frac{2}{20}$$

$$x = \frac{2}{10} = \frac{1}{5}$$

$$\frac{x}{5} = \frac{2}{20} = \frac{1}{10}$$

$$x = \frac{5}{10} = \frac{1}{2}$$

91. Solve for y:

$$30y + 35(50 - y) = 1600$$

$$30y + 1750 - 35y = 1600$$

$$-5y + 1750 = 1600$$

$$-5y = 1600 - 1750$$

$$-5y = -150$$

$$y = \frac{-150}{-5} = 30$$

92. Solve: $6(2+a) = 16$,

$$12 + 6a = 16$$

$$6a = 16 - 12$$

$$6a = 4$$

$$a = \frac{4}{6} = \frac{2}{3}$$

93.

Solve: $0.02x - 0.3 = 0.015 + 0.011x$

$$0.02x - 0.3 - 0.011x = 0.015 + 0.011x - 0.011x$$

$$0.009x - 0.3 = 0.015$$

$$0.009x = 0.015 + 0.3$$

$$0.009x = 0.315$$

$$x = \frac{0.315}{0.009} = 35$$

94. Solve: $3x - \frac{2}{3} = 6 - x$

$$4x = 6 + \frac{2}{3}$$

$$4x = \frac{18}{3} + \frac{2}{3}$$

$$4x = \frac{20}{3}$$

$$x = \frac{20}{3} \times \frac{1}{4} = \frac{5}{3}$$

95. Solve: $6(x-3) + 6 = 2(x+13) - 2$

96. Which statement is FALSE for the polynomial $3x^2y - 5x + 12$

- (a) It has coefficients 3 and 5. 3 and -5
- b. It has a constant of 12.
- c. It has variables x and y.
- d. It has exponents 2 and 1.

97. Which of the following equations is correct?

- a. $(4xy^2)(9x^3y) = 36x^3y^2$ $36x^4y^3$
- b. $(-4x^2y^3)(9x^3y^2) = -36x^6y^6$ $-36x^5y^5$
- c. $(-4x^3y^3)(-9x^3y^2) = 36x^6y^5$ $36x^6y^5$
- d. $(4x^3y)(-9x^2y) = -36x^5y$ $-36x^5y^2$

98. Simplify: $2a(3a^2 - 5) - 4a^2(7 + a) = 6a^3 - 10a - 28a^2 - 4a^3 = 2a^3 - 28a^2 - 10a$

- (a) $2a^3 - 28a^2 - 10a$
- b. $6a^3 - 32a^2 - 10a$
- c. $6a^3 - 24a^2 - 10a$
- d. $10a^3 - 28a^2 - 10a$

99. Simplify: $(8x^2 - 11) + (2x + 5) - (3x^2 - 7x + 10) = 8x^2 - 11 + 2x + 5 - 3x^2 + 7x - 10 = 5x^2 + 9x - 16$

- a. $-5x^2 - 9x + 4$
- b. $-5x^2 - 9x + 16$
- (c) $5x^2 + 9x - 16$
- d. $5x^2 + 9x + 4$

100. $\frac{20x^3y^4 + 40x^2y^5 - 12x^7y^5}{-4x^2y^2} = -5xy^2 - 10y^3 + 3x^5y^3$

- a. $-5x^5y^6 - 10x^4y^7 + 3x^9y^7$
- (b) $-5xy^2 - 10y^3 + 3x^5y^3$
- c. $5x^5y^6 - 10x^4y^7 - 3x^9y^7$
- d. $5xy^2 - 10y^3 - 3x^5y^3$

101. Simplify.

$$x^2 + y^2 - x^2 + 2y + xy - 2y + xy^2 = y^2 + xy + xy^2$$

102. Determine the degree: $3x^2 - 4x^5$

5

103. Simplify:

$$\underbrace{2x^2 - 3x + 5x - x^2 - 1} = x^2 + 2x - 1$$

104. Simplify:

$$\underbrace{-7 + 10x - 6y + 8x - 5y + 2} - 18x - 11y - 5$$

105. $-2x(x^2 + 5) = -2x^3 - 10x$

106. $5(x - 10) = 5x - 50$

107. $2x(3x^2 - 7x - 9) = 6x^3 - 14x^2 - 18x$

108. Add.

$$(x^2 - 5) + (x^2 + 5) = \underbrace{x^2 - 5} + \underbrace{x^2 + 5} = 2x^2$$

109. $(-5xy + 2x^2 - 3y^2) + (-2xy - 3x^2 + 5y^2) = \underbrace{-5xy + 2x^2 - 3y^2} + \underbrace{-2xy - 3x^2 + 5y^2} = -x^2 + 2y^2 - 7xy$

110. $(-2x^2 - 5x + 3) + (7x^2 - 2x - 4) + (3x^2 + x - 5) = \underbrace{-2x^2 - 5x + 3} + \underbrace{7x^2 - 2x - 4} + \underbrace{3x^2 + x - 5} = 8x^2 - 6x - 6$

111. $(-3x^2 - 5x + 1) - (4x^2 - 2x - 5) = \underbrace{-3x^2 - 5x + 1} - \underbrace{4x^2 - 2x - 5} = -7x^2 - 3x + 6$

112. $(3x^2 + 2x - 7) - (3x^2 + 2x - 8) = \underbrace{3x^2 + 2x - 7} - \underbrace{3x^2 + 2x - 8} = 1$

113. $\frac{6x + 12y}{-2} = -3x - 6y$

114. $\frac{5x^2 + 10}{5} = x^2 + 2$

115. $\frac{20x^2 - 5x + 15}{-5} = -4x^2 + x - 3$

116. $\frac{18n^3 - 15n^2 + 12n + 3}{3} = 6n^3 - 5n^2 + 4n + 1$

117. In which quadrant would you find the point (1, -2)?

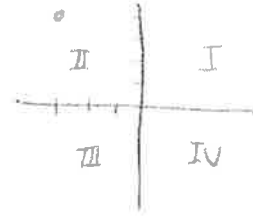
- a. I
b. II

- c. III
d. IV



118. In which quadrant would you find the point $(-3, 4)$?

- a. I
- b. II
- c. III
- d. IV



119. If a point (x, y) is in quadrant IV, then

- a. $x > 0, y > 0$
- b. $x > 0, y < 0$
- c. $x < 0, y < 0$
- d. $x < 0, y > 0$

$x > 0, y < 0$

120. Is $(-1, 5)$ a solution to the equation $y = -3x + 2$?

YES!

→ Sub $(-1, 5)$ into eqn

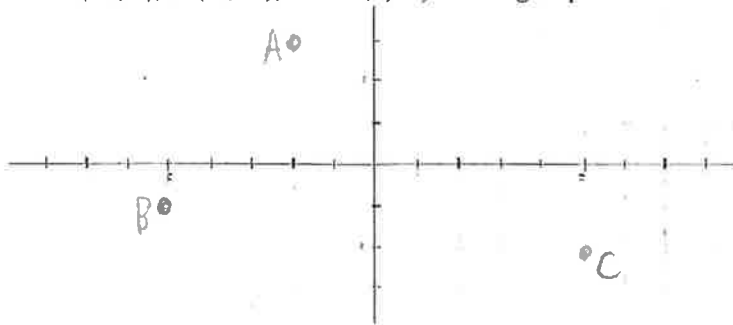
$$y = -3x + 2$$

$$5 = -3(-1) + 2$$

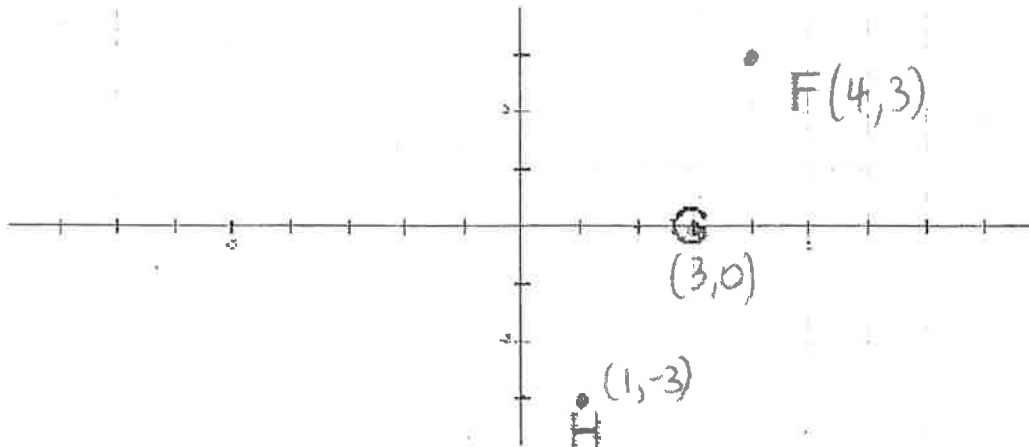
$$5 = 3 + 2$$

$$5 = 5 \quad \checkmark$$

121. Plot A $(-2, 3)$, B $(-5, -1)$, and C $(5, -2)$ on the grid provided.



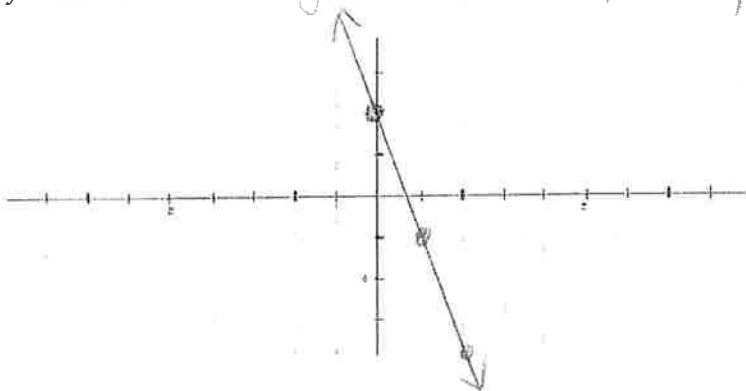
122. Find the coordinates of F, G, and H.



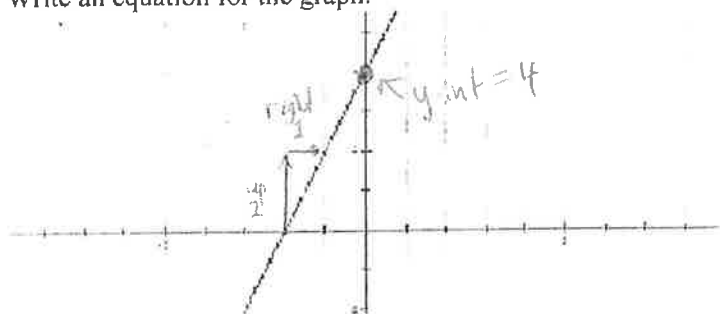
123. Graph the equation and identify the y-intercept.

$y = -3x + 2$

y-int = 2 slope = $\frac{-3}{1}$ ← down 3 ← right 1



124. Write an equation for the graph.



$y = \frac{2}{1}x + 4$

$y = 2x + 4$

125. Is $(-7, 4)$ a solution to $2x - 7y = 14$?

sub $(-7, 4)$ into eqn: $2x - 7y = 14$

$2(-7) - 7(4) = 14$

$-14 - 28 = 14$

$-42 = 14$ X

No

126. Complete the table of values for the equation $4x + 5y = -20$

x	y
0	-4
-5	0
5	-8

$4(0) + 5y = -20$

$0 + 5y = -20$

$5y = -20$

$y = -4$

$4x + 5(0) = -20$

$4x = -20$

$x = -5$

$4x + 5(-8) = -20$

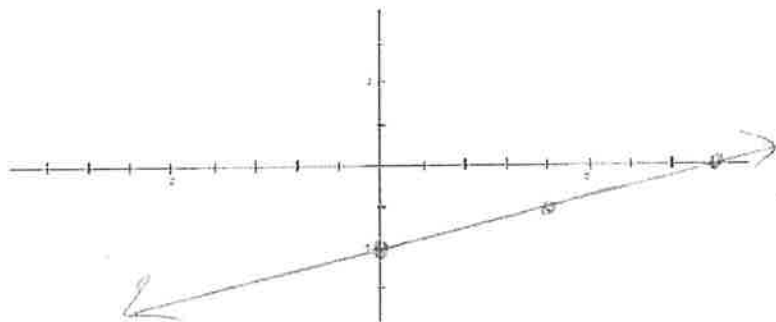
$4x - 40 = -20$

$+40 +40$

$4x = 20$

$x = 5$

127. Graph $x - 4y = 8$ on the grid provided.



$x - 4y = 8 + 4y$

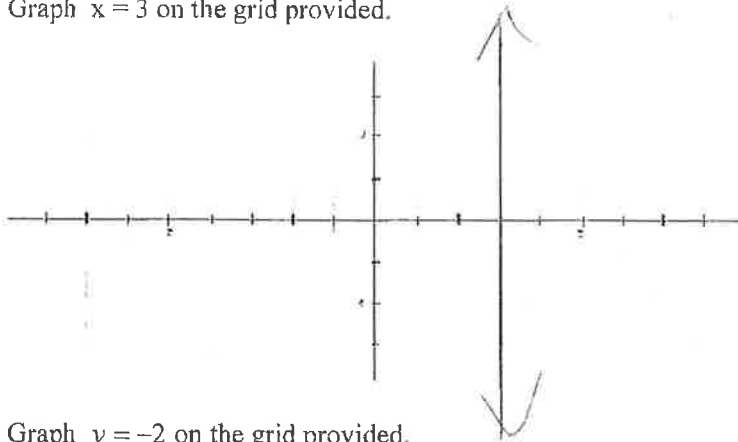
$x - 8 = 4y$

$\frac{1}{4}x - 2 = y$ or $y = \frac{1}{4}x - 2$

Name: _____

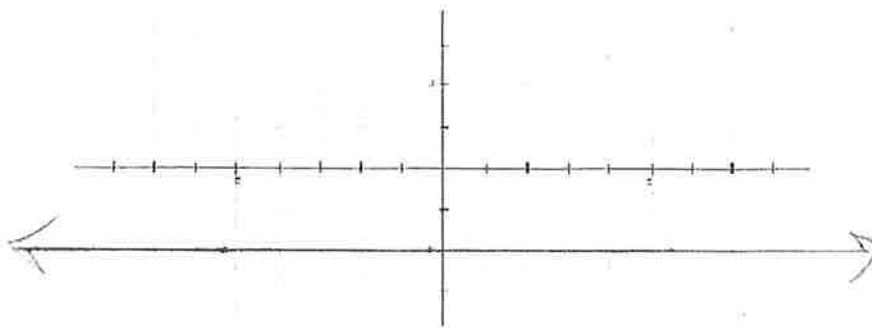
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128. Graph $x = 3$ on the grid provided.



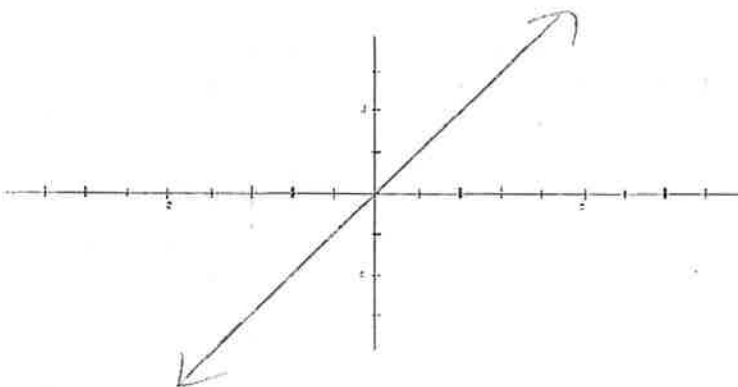
x	y
3	-5
3	0
3	5

129. Graph $y = -2$ on the grid provided.



x	y
-4	-2
0	-2
4	-2

130. Graph $y = x$ on the grid provided.



$$y = 1x + 0$$
$$b = 0$$
$$m = \frac{1}{1}$$

131. Write an expression relation y to x .

x	0	1	2	3	4
y	-1	1	3	5	7

$$y = 2x - 1$$

132. Write an expression relation y to x .

x	0	1	2	3	4
y	2	-1	-4	-7	-10

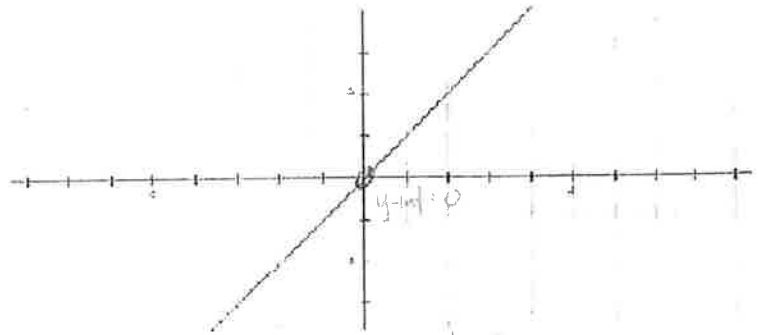
$$y = -3x + 2$$

133. Barbie and Ken decide to leave their campervan in Bedrock City and rent a car for a two-day side trip to Riverdale to visit Betty and Veronica. The cost of renting the car is \$45 per day and \$0.30 per km.

- a) Write an equation relating cost (C) to the number of Km (n) travelled, in one day $C = 0.30n + 45$
- b) Calculate the cost of their day trip of 576 km.

$$C = 0.30(576) + 45$$

$$C = \$217.80$$



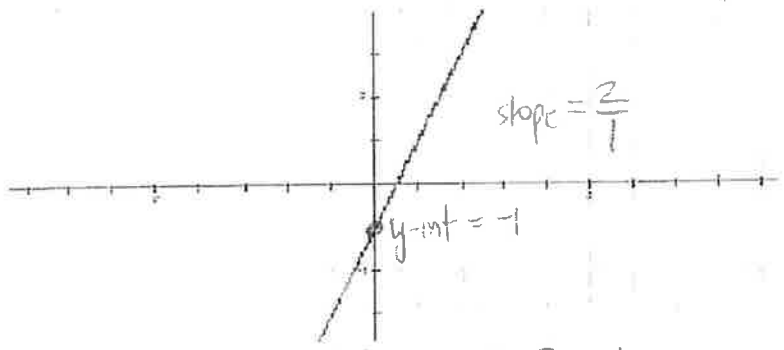
134. Match the equation with the graph:

- a. $y = x$
- b. $y = -x$

- c. $x + y = 1$
- d. $x - y = 1$

y-int = 0
slope = $\frac{1}{1} = 1$

$y = 1x + 0$
or $y = x$



135. Match the equation with the graph:

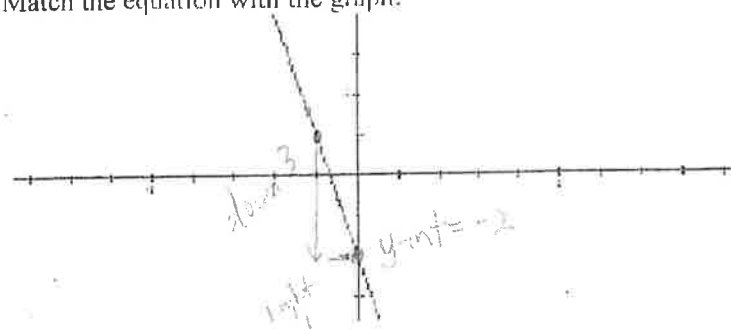
- a. $2x + y = 1$
- b. $2x - y = 1$

- c. $x + 2y = 1$
- d. $x - 2y = 1$

$y = 2x - 1$
 $+1 -y -y +1$

$1 = 2x - y$

136. Match the equation with the graph:



$y = -3x - 2$

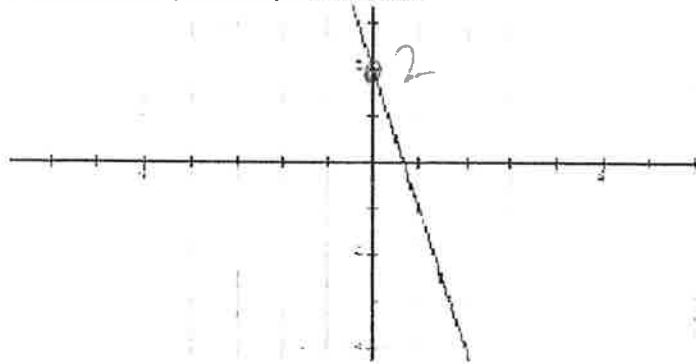
- a. $y = 3x + 2$
- b. $y = -3x + 2$

- c. $y = 3x - 2$
- d. $y = -3x - 2$

Name: _____

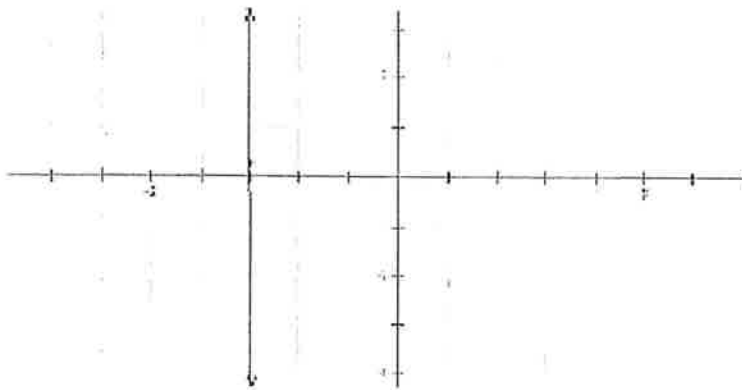
ID: A

137. Determine the y-intercept, if it exists.



$$y\text{-int} = 2$$

138. Determine the y-intercept, if it exists.



no y int
exists

139. Given $\underbrace{-2x^3} + \underbrace{4xy} + \underbrace{8y^2} - \underbrace{5xy} + \underbrace{3x^3} - \underbrace{17y^2}$,

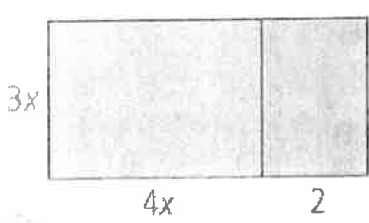
- (a) Simplify the polynomial above.
- (b) Write the polynomial above in descending powers of x .
- (c) Classify the polynomial above as a monomial, binomial, or trinomial.

(a) $x^3 - 9y^2 - xy$

(b) $x^3 - xy - 9y^2$

(c) trinomial

140. Expand $(-3y)(4y+1)$ using the distributive property.
 a. $-7y^2 - 3y$ $-12y^2 - 3y$ c. $-7y + 1$
 b. $-12y^2 - 3y$ d. $-12y - 1$
141. Use the distributive property to expand $(5.2x)(-3x+2)$. = $-15.6x^2 + 10.4x$
 a. $15.6x^2 - 10.4x$ c. $-15.6x^2 + 10.4x$
 b. $15.6x^2 + 10.4x$ d. $-15.6x + 10.4$
142. Apply the distributive property to simplify $2x(x-4) - 3x(x-4)$. = $2x^2 - 8x - 3x^2 + 12x$
143. Expand and simplify: $(p+3)(p-7)$ = $p^2 - 7p + 3p - 21$ = $p^2 - 4p - 21$ = $-p^2 + 4x$
 a. $p^2 - 4p - 21$ c. $p^2 + 10p - 21$
 b. $p^2 - 10p - 21$ d. $p^2 + 4p - 21$
144. Expand and simplify: $(4-r)(7-r)$
 a. $28 - 11r + r^2$ c. $28 + 3r + r^2$
 b. $28 - 3r + r^2$ d. $28 + 11r + r^2$
145. The product of $(7x-1)(2x+3)$ is
 a. $14x^2 + 19x - 3$ $14x^2 + 21x - 2x - 3$ c. $14x^2 - 19x - 3$
 b. $14x^2 + 23x - 3$ $14x^2 + 19x - 3$ d. $14x^2 - 23x + 3$
146. Multiply $(3x-2)(7x+3)$ = $21x^2 + 9x - 14x - 6$ = $21x^2 - 5x - 6$
147. Multiply $(y-2x)(2y+3x)$ = $2y^2 + 3xy - 4xy - 6x^2$ = $2y^2 - xy - 6x^2$
148. Which multiplication statement is represented by the area model below?



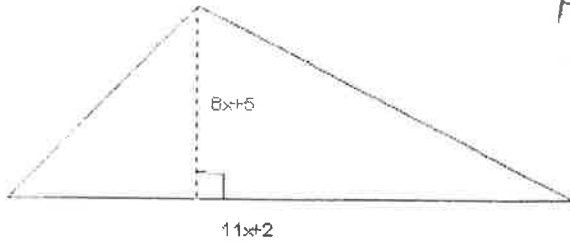
$3x(4x+2) = 12x^2 + 6x$

- a. $(3x)(4x+2) = 12x^2 + 6x$ c. $(3x)(4x+2) = 7x+2$
 b. $(3x)(4x-2) = 12x^2 - 6x$ d. $(3x)(4x-2) = 7x-2$
149. Find the greatest common factor of $-7x^3y^2$, $14x^2y$, $28x^5y^3$
 a. $7xy$ c. $7xy^2$ $7x^2y$
 b. $7x^5y^3$ d. $7x^2y$
150. Find the greatest common factor of $12a^4b^3c^2$, $-36a^8b^4c^6$, $144a^3b^6c^4$
 a. $4a^3b^4c^4$ c. $12a^3b^3c^4$ $12a^3b^3c^4$
 b. $12a^4b^4c^6$ d. $6a^4b^2c^4$

151. Finish factoring the expression below.

$$\frac{4xy^3}{2xy} - \frac{8x^2y}{2xy} + \frac{12xy}{2xy} = 2xy(2y^2 - 4x + 6)$$

152. Calculate the area of the triangle shown.



$$A = \frac{bh}{2} = \frac{(11x+2)(6x+5)}{2} = \frac{66x^2 + 55x + 12x + 10}{2} = \frac{66x^2 + 67x + 10}{2} = 33x^2 + 33.5x + 5$$

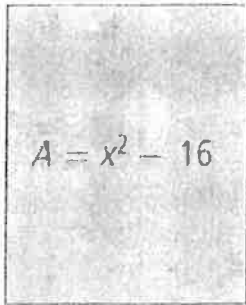
153. Factor: $t^2 + 9t - 36$
 a. $(t-2)(t+18)$
 b. $(t+2)(t-18)$
 c. $(t+12)(t-3)$
 d. $(t-12)(t+3)$
154. Factor: $v^2 - 13v + 36$
 a. $(v+3)(v+12)$
 b. $(v-3)(v-12)$
 c. $(v-4)(v-9)$
 d. $(v+4)(v+9)$
155. Factor: $-24 - 2x + x^2$
 a. $(6+x)(-4+x)$
 b. $(3+x)(-8+x)$
 c. $(-3+x)(8+x)$
 d. $(-6+x)(4+x)$
156. Factor: $-3b^2 + 15b + 18$
 a. $-3(b-2)(b+3)$
 b. $-3(b+2)(b-3)$
 c. $-3(b-1)(b+6)$
 d. $-3(b+1)(b-6)$
157. Factor: $-5m^2 + 20m + 60$
 a. $-5(m+2)(m-6)$
 b. $-5(m-2)(m+6)$
 c. $-5(m-4)(m+3)$
 d. $-5(m+4)(m-3)$
158. Factor: $s^2 - 33s + 32$
 a. $(s-2)(s+10)$
 b. $(s-4)(s-5)$
 c. $(s+4)(s-5)$
 d. $(s-4)(s+5)$
159. Factor $x^2 - 11x - 20$ completely.
 a. $(x-2)(x+10)$
 b. $(x-4)(x-5)$
 c. $(x+4)(x-5)$
 d. $(x-4)(x+5)$
160. Factor completely. $-3u^2 - 6u + 144$
 a. $x^2 - 4x + 16$
 b. $x^2 - 9x + 81$
 c. $x^2 - 6x + 75$
 d. $x^2 - 14x + 49$

$$-3(u+8)(u-6)$$

$$(x-7)(x-7) = (x-7)^2$$

162. Factor $8x^2 - 32 = 8(x^2 - 4) = 8(x+2)(x-2)$

163. Determine the missing dimension of the rectangle.



$$x^2 - 16 = (x+4)(x-4)$$

a. $x - 4$

c. $x^2 + 4$

b. $x + 4$

d. $x^2 - 4$

164. Factor: $16p^2 - 81q^2 = (4p + 9q)(4p - 9q)$

a. $(4p - 9q)^2$

c. $(16p - 9q)(p - 9q)$

b. $(4p + 9q)^2$

d. $(4p + 9q)(4p - 9q)$

165. Factor: $49s^2 - 64t^2 = (7s + 8t)(7s - 8t)$

