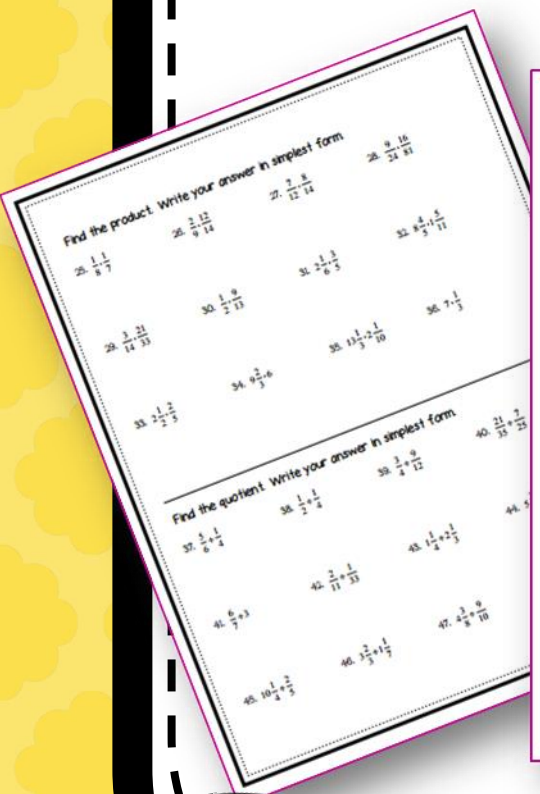
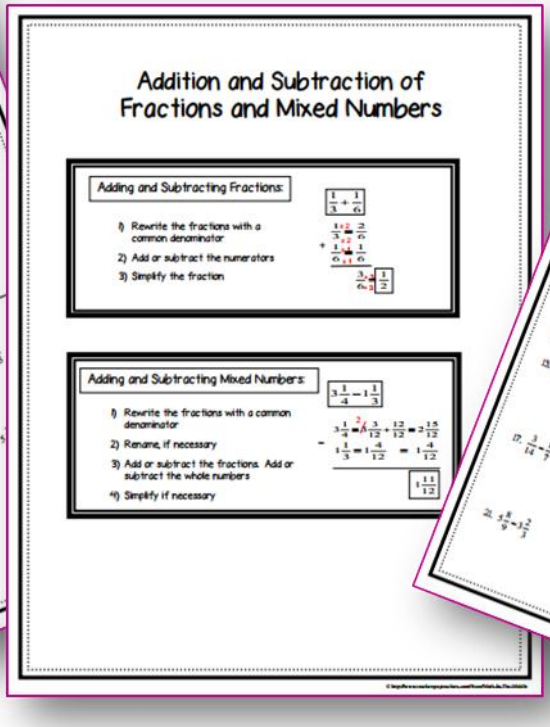
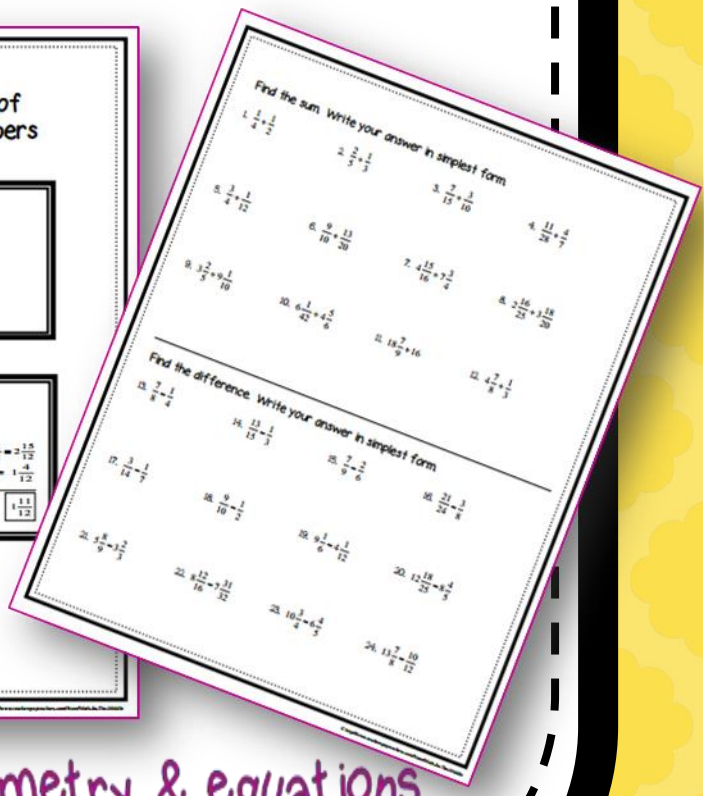
Math Review Packet for 6th – 7th Grades







fractions, decimals, geometry, & equations

Math in the Middle

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Addition and Subtraction of Fractions and Mixed Numbers

Adding and Subtracting Fractions:

1) Rewrite the fractions with a common denominator
2) Add or subtract the numerators
3) Simplify the fraction

$$\boxed{\frac{1}{3}+\frac{1}{6}}$$

$$\begin{array}{r} \frac{1}{3}\overset{\times 2}{=}\frac{2}{6} \\ +\ \frac{1}{6}\overset{\times 1}{=}\frac{1}{6} \\ \hline \frac{3}{6}\overset{\div 3}{=}\boxed{\frac{1}{2}} \end{array}$$

Adding and Subtracting Mixed Numbers:

1) Rewrite the fractions with a common denominator
2) Rename, if necessary
3) Add or subtract the fractions. Add or subtract the whole numbers
4) Simplify if necessary

$$\boxed{3\frac{1}{4}-1\frac{1}{3}}$$

$$\begin{array}{rl} & 3\frac{1}{4}=\overset{2}{\not 3}\frac{3}{12}+\frac{12}{12}=2\frac{15}{12} \\ - & 1\frac{1}{3}=1\frac{4}{12} \quad = \quad 1\frac{4}{12} \\ \hline & \boxed{1\frac{11}{12}} \end{array}$$

Find the sum. Write your answer in simplest form.

1. $\frac{1}{4}+\frac{1}{2}$

2. $\frac{2}{5}+\frac{1}{3}$

3. $\frac{7}{15}+\frac{3}{10}$

4. $\frac{11}{28}+\frac{4}{7}$

5. $\frac{3}{4}+\frac{1}{12}$

6. $\frac{9}{10}+\frac{13}{20}$

7. $4\frac{15}{16}+7\frac{3}{4}$

8. $2\frac{16}{25}+3\frac{18}{20}$

9. $3\frac{2}{5}+9\frac{1}{10}$

10. $6\frac{1}{42}+4\frac{5}{6}$

11. $18\frac{7}{9}+16$

12. $4\frac{7}{8}+\frac{1}{3}$

Find the difference. Write your answer in simplest form.

13. $\frac{7}{8}-\frac{1}{4}$

14. $\frac{13}{15}-\frac{1}{3}$

15. $\frac{7}{9}-\frac{2}{6}$

16. $\frac{21}{24}-\frac{3}{8}$

17. $\frac{3}{14}-\frac{1}{7}$

18. $\frac{9}{10}-\frac{1}{2}$

19. $9\frac{1}{6}-4\frac{1}{12}$

20. $12\frac{18}{25}-8\frac{4}{5}$

21. $5\frac{8}{9}-3\frac{2}{3}$

22. $8\frac{12}{16}-7\frac{31}{32}$

23. $10\frac{3}{4}-6\frac{4}{5}$

24. $13\frac{7}{8}-\frac{10}{12}$

Multiplication and Division of Fractions and Mixed Numbers

Multiplying Fractions and Mixed Numbers:

1) Convert mixed numbers to improper fractions
2) Cross simplify if possible
3) Multiply the 2 numerators and then multiply the 2 denominators
4) Simplify if necessary

$$2\frac{1}{4} \cdot \frac{1}{3}$$

$$2\frac{1}{4} = \frac{9}{4}$$

$$\frac{\overset{3}{\cancel{9}}}{4} \cdot \frac{1}{\underset{1}{\cancel{3}}} = \boxed{\frac{3}{4}}$$

Dividing Fractions and Mixed Numbers:

1) Convert mixed numbers to improper fractions
2) "Same, Change, Flip" (keep first fraction the same, change division to multiplication, flip second fraction to its reciprocal)
3) Cross simplify if possible and then multiply
4) Simplify if necessary

$$\frac{3}{7} \div \frac{9}{10}$$

$$\frac{\overset{1}{\cancel{3}}}{7} \cdot \frac{10}{\underset{3}{\cancel{9}}} = \boxed{\frac{10}{21}}$$

Find the product. Write your answer in simplest form.

25. $\frac{1}{8} \cdot \frac{1}{7}$

26. $\frac{2}{9} \cdot \frac{12}{14}$

27. $\frac{7}{12} \cdot \frac{8}{14}$

28. $\frac{9}{24} \cdot \frac{16}{81}$

29. $\frac{3}{14} \cdot \frac{21}{33}$

30. $\frac{1}{2} \cdot \frac{9}{13}$

31. $2\frac{1}{6} \cdot \frac{3}{5}$

32. $8\frac{4}{5} \cdot 1\frac{5}{11}$

33. $2\frac{1}{2} \cdot \frac{2}{5}$

34. $9\frac{2}{3} \cdot 6$

35. $13\frac{1}{3} \cdot 2\frac{1}{10}$

36. $7 \cdot \frac{1}{3}$

Find the quotient. Write your answer in simplest form.

37. $\frac{5}{6} \div \frac{1}{4}$

38. $\frac{1}{2} \div \frac{1}{4}$

39. $\frac{3}{4} \div \frac{9}{12}$

40. $\frac{21}{35} \div \frac{7}{25}$

41. $\frac{6}{7} \div 3$

42. $\frac{2}{11} \div \frac{1}{33}$

43. $1\frac{1}{4} \div 2\frac{1}{3}$

44. $5\frac{3}{6} \div 3$

45. $10\frac{1}{4} \div \frac{2}{5}$

46. $3\frac{2}{3} \div 1\frac{1}{7}$

47. $4\frac{3}{8} \div \frac{9}{10}$

48. $8 \div \frac{3}{4}$

Operations with Decimals

Adding and Subtracting Decimals:

$5.2 + 10.03$

1) Line up decimal points
2) Bring the decimal down
3) Add or subtract as if numbers are whole numbers

$$\begin{array}{r} 5.2 \\ +\ 10.03 \\ \hline 15.23 \end{array}$$

Multiplying Decimals:

1.03×2.8

1) Ignore the decimal points
2) Multiply as if numbers are whole numbers
3) Count the number of decimal places in the problem and move the decimal point in answer that many places

$$\begin{array}{r} 1.03 \\ \times\ \ 2.8 \\ \hline 824 \\ 2060 \\ \hline 2.884 \end{array}$$

Dividing Decimals:

$6.4 \div 1.2$

1) If there is a decimal in the divisor, move it to the end of the number and move the decimal in the dividend the same number of places
2) Bring decimal point in dividend straight up.
3) Divide. Add zeros to dividend and bring down if necessary.

$$\begin{array}{r} 5.\overline{3} \\ 1.2\overline{)\,6.4.0} \\ \underline{60} \\ 40 \\ \underline{36} \\ 4 \end{array}$$

Find the sum or difference.

49. $6.2 + 3.4$

50. $8.04 - 6.8$

51. $12.4 + 0.899$

52. $12.9 - 2.043$

53. $163.29 + 13.987$

54. $13 - 6.7$

55. $3.91 + 1.93$

56. $34.2 - 29.027$

Find the product.

57. 9.2×3.1

58. $(14.1)(2.7)$

59. 91×4.5

60. $(82.04)(1.2)$

61. $(1.1)(6.78)$

62. 45×0.1

63. 0.010×13.9

64. $(2.34)(5.6)$

Find the quotient.

65. $2\overline{)8.4}$

66. $13\overline{)1.56}$

67. $2\overline{)7.45}$

68. $8\overline{)9}$

69. $3.4\overline{)68}$

70. $0.2\overline{)9.4}$

71. $0.15\overline{)0.045}$

72. $0.3\overline{)4}$

Geometry

Area Formulas: (remember area = the space inside a figure)

Area of Rectangle $= length \times width$

Area of Triangle $= \frac{1}{2} base \times height$

Area of Circle $= \pi \cdot radius^2$

Area of Parallelogram $= base \times height$

Perimeter: (remember perimeter = the distance around a figure)

Perimeter of any polygon: add up all the sides

$Circumference\ of\ Circle = 2 \cdot \pi \cdot radius$

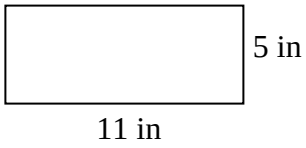
Volume: (remember volume = the capacity of a 3D figure)

Volume of Rectangular Prism $= length \times width \times height$

$\pi \cdot diameter$

Find the area and perimeter (or circumference). Use 3.14 for pi:

73.



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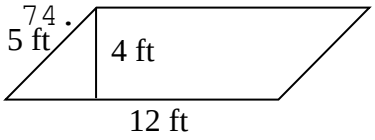

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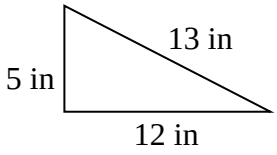

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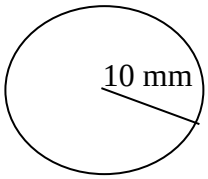

Find the volume:

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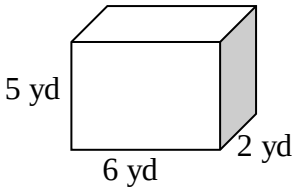

Solve the word problem:

78. Danny is installing a fence around his rectangular yard. His yard is 20 feet long by 45 feet wide. If the fencing he picked out costs $25 per foot, how much money will Danny spend on the fence?

79. Tameka wants to put a carpet in her rectangular bedroom. Her room is 22 feet long by 18 feet wide. How much carpeting will Tameka need?

80. Don wants to bring some sand home from his vacation at the beach. He has a box that is 3 inches wide, 4 inches long, and 2 inches tall. How much sand can he fit in the box?

Solving One-step Equations

Addition Equations:

Subtract the number on the same side of the equal sign as the variable from each side of the equation

$$x + 3 = 9$$

$$\begin{array}{r} x + 3 = 9 \\ -3 \quad -3 \\ \hline x = 6 \end{array}$$

Subtraction Equations:

Add the number on the same side of the equal sign as the variable to each side of the equation

$$14 = x - 7$$

$$\begin{array}{r} 14 = x - 7 \\ +7 \quad +7 \\ \hline 21 = x \end{array}$$

Multiplication Equations:

Divide each side of the equation by the number on the same side of the equal sign as the variable

$$5m = 105$$

$$\begin{array}{r} \frac{5m}{5} = \frac{105}{5} \\ \hline m = 21 \end{array}$$

Division Equations:

Multiply each side of the equation by the number on the same side of the equal sign as the variable

$$\frac{y}{13} = 5$$

$$\begin{array}{r} 13 \times \frac{y}{13} = 5 \times 13 \\ \hline y = 65 \end{array}$$

Solve for the given variable:

81. $x+18=32$

82. $18f=720$

83. $h-56=57$

84. $\frac{b}{6}=12$

85. $12=r-76$

86. $33+d=65$

87. $14m=42$

88. $10c=5$

89. $38=19j$

90. $w+65=100$

91. $r-7=9$

92. $x\div 12=9$

93. $14+x=18$

94. $\frac{p}{22}=7$

95. $47=x-5$

96. $k+16=76$

97. $2=6m$

98. $t-8=14$

99. $\frac{h}{19}=11$

100. $47=18+b$

Answer Key

1. $\frac{3}{4}$	2. $\frac{11}{15}$	3. $\frac{23}{30}$	4. $\frac{27}{28}$
5. $\frac{5}{6}$	6. $1\frac{11}{20}$	7. $12\frac{11}{16}$	8. $6\frac{27}{50}$
9. $12\frac{1}{2}$	10. $10\frac{6}{7}$	11. $34\frac{7}{9}$	12. $5\frac{5}{24}$
13. $\frac{5}{8}$	14. $\frac{8}{15}$	15. $\frac{4}{9}$	16. $\frac{1}{2}$
17. $\frac{1}{14}$	18. $\frac{2}{5}$	19. $5\frac{1}{12}$	20. $3\frac{23}{25}$
21. $2\frac{2}{9}$	22. $\frac{25}{32}$	23. $3\frac{19}{20}$	24. $13\frac{1}{24}$
25. $\frac{1}{56}$	26. $\frac{4}{21}$	27. $\frac{1}{3}$	28. $\frac{2}{27}$
29. $\frac{3}{22}$	30. $\frac{9}{26}$	31. $1\frac{3}{10}$	32. $12\frac{4}{5}$
33. 1	34. 58	35. 28	36. $2\frac{1}{3}$
37. $3\frac{1}{3}$	38. 2	39. 1	40. $2\frac{1}{7}$
41. $\frac{2}{7}$	42. 6	43. $\frac{15}{28}$	44. $1\frac{5}{6}$
45. $25\frac{5}{8}$	46. $3\frac{5}{24}$	47. $4\frac{31}{36}$	48. $10\frac{2}{3}$
49. 9.6	50. 1.24	51. 13.299	52. 10.857
53. 177.277	54. 6.3	55. 5.84	56. 5.173
57. 28.52	58. 38.07	59. 409.5	60. 98.448
61. 7.458	62. 4.5	63. 0.139	64. 13.104
65. 4.2	66. 0.12	67. 3.725	68. 1.125
69. 20	70. 47	71. 0.3	72. $13.\overline{3}$
73. $A=55in^2$; P=32in	74. $A=48ft^2$; P=34ft	75. $A=30in^2$; P=30in	76. $A=314mm^2$; $C=62.8mm$
77. $V=60yd^3$	78. $3,250	79. 396 ft^2	80. $24in^3$
81. x=14	82. f=40	83. h=113	84. b=72
85. r=88	86. d=32	87. m=3	88. $c=\frac{1}{2}$
89. j=2	90. w=35	91. r=16	92. x=108
93. x=4	94. p=154	95. x=52	96. k=60
97. $m=1/3$	98. t=22	99. h=209	100. b=29