

Senior

Math 8,9,10 review

Calculators may not be used during the review unit.

This booklet belongs to: _____

LESSON #	DATE	QUESTIONS FROM NOTES	Questions that I find difficult
1		Pg.	
2		Pg.	
3		Pg.	
TEST			

Your teacher has important instructions for you to write down below.

Math 8,9,10 Review Pre-Test

This pretest covers concepts that this course expects that you have mastered. We will use the next few days to ensure you are up to speed with this material.

Instructions:

1. Complete this practice test by yourself.
2. After you have done all you can mark it, using the key at the bottom of this page.
3. Star every question that you would like some reminders on.
4. Correct all of your mistakes using your peers or by reading this workbook.

1. Evaluate.

$$12 \div (6 - 4)(-9 + 5 \times 2)^3 - 100$$

2. Evaluate. $\frac{-2\left(\frac{7}{2} - \frac{6}{4}\right)}{5} =$

3. Evaluate. $\frac{4}{a} + \frac{5}{b} =$

4. Simplify. $\frac{4x^3m^4 + 2x^4m}{2x^2m^2}$

5. Factor. $2x^2 + 11x + 5$

6. Simplify. $\frac{x^3 + 2x^2 + 1x}{x^2 + x}$

7. Solve. $\frac{5}{2}(m - 2) + 2 = 5$

8. Simplify $-3\sqrt{20} - \sqrt{45}$

9. Simplify. $\frac{4m^5m^3(m^3)^2}{6m^3(m^2)^2} =$

BEDMAS: As a senior student your mastery of order of operations is expected.

Challenge #1: Evaluate: $5 - 3(4 - 3 \times 2)^2$

Challenge #2: Evaluate: $3 + 5((5 - 3) \times 3^2)$

BEDMAS review.

<p>1. Evaluate. $5 - 3(4 - 3 \times 2)^2$</p> <p>Brackets first. Multiply before subtracting.</p> $5 - 3(4 - 6)^2$ <p>Subtract inside the brackets only.</p> $5 - 3(-2)^2$ <p>Exponents.</p> $5 - 3 \times 4$ <p>Multiply.</p> $5 - 12$ <p>Subtract.</p> -7	<p>2. Evaluate. $3 + 5((5 - 3) \times 3^2)$</p> <p>Complete the brackets inside the brackets first.</p> $3 + 5((2) \times 3^2)$ <p>Exponents.</p> $3 + 5((2) \times 9)$ <p>Multiply inside the brackets.</p> $3 + 5(18)$ <p>Multiply.</p> $3 + 90$ <p>Add.</p> 93
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Evaluate.

3. $3 \times 2 - 5(4 - 3 \times 2)^3 + 1$

4. $2 - 2(-4 - 3 \times 2)^2(2)$

5. $8 \div (2 - 4)(9 - 5 \times 2)^3 + 1$

47

-398

5

Evaluate.

6. $-5 \times 2 - 4(2 - 3 \times 2)^2 - 4$

-78

7. $5 - 2(-(-4 + 3) \times 2)^2 \times 10$

-75

8. $12 \div (6 - 4)(-9 + 5 \times 2)^3 - 100$

-94

Fractions: Senior math courses require you to calculate complex fraction questions without a calculator.

Challenge #3: $3\frac{1}{2} + \frac{6}{7}$

Challenge #4: $3\frac{1}{2} - \frac{6}{7}$

Challenge #5: $3\frac{1}{2} \times \frac{6}{7}$

Challenge #6: $3\frac{1}{2} \div \frac{6}{7}$

See the next page for solutions.

9. Evaluate.

$$1\frac{2}{3} + \frac{4}{5} =$$

$\frac{37}{15}$

10. Evaluate.

$$-\frac{2}{3} - \frac{4}{5} =$$

$-\frac{22}{15}$

11. Evaluate.

$$-2\frac{2}{3} + \frac{4}{5} =$$

$-\frac{28}{15}$

12. Evaluate.

$$\frac{5}{4} \times \frac{3}{2} =$$

$\frac{15}{8}$

Fraction Rules

	Addition	Subtraction	Multiplication	Division
	13. $3\frac{1}{2} + \frac{6}{7}$	14. $3\frac{1}{2} - \frac{6}{7}$	15. $3\frac{1}{2} \times \frac{6}{7}$	16. $3\frac{1}{2} \div \frac{6}{7}$
Step 1	Convert mixed number to improper fractions.			
	$\frac{7}{2} + \frac{6}{7}$	$\frac{7}{2} - \frac{6}{7}$	$\frac{7}{2} \times \frac{6}{7}$	$\frac{7}{2} \div \frac{6}{7}$
Step 2	Create equivalent fractions with common denominators.		Numerator times numerator and denominator times denominator.	Multiply the first fraction by the reciprocal of the second fraction.
	$\frac{7 \times 7}{2 \times 7} + \frac{6 \times 2}{7 \times 2}$ $= \frac{49}{14} + \frac{12}{14}$	$\frac{7 \times 7}{2 \times 7} - \frac{6 \times 2}{7 \times 2}$ $= \frac{49}{14} - \frac{12}{14}$	$\frac{7 \times 6}{2 \times 7}$	$\frac{7}{2} \times \frac{7}{6}$
Step 3	Add numerators.	Subtract numerators.	Reduce numerator and denominator.	Reduce numerator and denominator.
	$\frac{61}{14}$	$\frac{37}{14}$	$\frac{\cancel{7} \times 6}{2 \times \cancel{7}} = \frac{6}{2} = 3$	$\frac{49}{12}$

17. Evaluate.

$$-\frac{15}{10} \times \frac{-25}{-20} =$$

$$\frac{-15}{8}$$

18. Evaluate.

$$-\frac{25}{24} \times \frac{36}{30} =$$

$$-\frac{5}{4}$$

19. Evaluate.

$$\left(\frac{5}{4}\right)^2 \div \frac{5}{8} =$$

$$\frac{5}{2}$$

20. Evaluate.

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

$$-\frac{3}{2}$$

Evaluate.

21. Evaluate.

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

$$\frac{9}{2} \quad -\frac{4}{5}$$

22. Evaluate.

$$-\frac{2}{5} \left(\frac{7}{2} - \frac{6}{4}\right) =$$

23. Evaluate.

$$-3 + \frac{10}{6} \times \frac{8}{12} =$$

$$-\frac{17}{9}$$

24. Evaluate.

$$\left(\frac{5}{3}\right)^2 - \frac{12}{20} =$$

$$\frac{98}{45}$$

Challenge #8: Evaluate $\frac{a}{m} + \frac{b}{n} =$

Write down the important steps to completing this problem.

Evaluate each of the following:

25. $\frac{a}{2} + \frac{b}{3} =$

26. $\frac{m}{4} - \frac{n}{5} =$

27. $\frac{a}{3} - \frac{b}{9} =$

28. $\frac{a}{m} + \frac{b}{n} =$

Solution:

$$\frac{a \times n}{m \times n} + \frac{b \times m}{n \times m} =$$

$$\frac{an + bm}{mn} =$$

29. $\frac{a}{m^2} + \frac{b}{m} =$

30. $\frac{mn}{nn} + \frac{n}{m} =$

31. $\frac{a}{mn} + \frac{b}{m^3} =$

32. $\frac{4}{a} + \frac{5}{b} =$

Challenge #9: Expand $(a + 1)(a - 2)$

Challenge #10: Expand $(x-5)^2 =$

Write down the common error that people make on this problem?

What does expand mean?

33. Expand $(a + 1)(a - 2)$

Solution:
 $a^2 - 2a + 1a - 2$
 $a^2 - a - 2$

34. Expand $(b + 4)(b + 5)$

35. Expand $(c - 11)(c - 3)$

36. $(d + 10)(d + 5)$

37. Expand $(x - 5)^2$

Solution:
 $(x - 5)(x - 5)$
 $x^2 - 5x - 5x + 25$
 $x^2 - 10x + 25$

38. Expand $(x + 1)^2$

39. Expand
 $(x - 5y)(x + 5y)$

40. Expand
 $(3x + 10y)(3x - 10y)$

Challenge #11: Factor $2x + 6$

Challenge #12: Factor $x^3 + 3x^2$

What does factor mean?

41. Factor $2x + 6$

Solution:
 Factor out the GCF out of each term.
 $2(x + 3)$

42. Factor $x^3 + 3x^2$

Solution:
 $x^2(x + 3)$

43. Factor $-6y + 3y^2 - 3y^3$

44. $4w + 3w^2 =$

45. $2x^5y^2z^4 - 4x^3y^{11}z^3 =$

46. $7x^4 + 21x^2 + 14x^6 =$

Challenge #13: Simplify $\frac{10x^3 + 20x}{15x^2}$

Challenge #14: Write $\frac{10x + 7}{10}$ in an equivalent form.

Simplify.

47. $\frac{10x^3 + 20x}{15x^2}$

48. $\frac{10x^3 + 2x^4}{12x^2}$

49. $\frac{-6x^3m + 2x^4m}{8x^2m}$

50. $\frac{10x^3m + 2x}{5x^2m}$

51. $\frac{4x^3m^4 + 2x^4m}{2x^2m^2}$

52. $\frac{-6x^3m^5 + 12x^4m^3}{4x^2m^2}$

Challenge #15: Factor $m^2 + 8m + 12$.

Challenge #16: Factor $2m^2 + 16m + 24$.

Remember factoring is the opposite of expanding.

<p>53. Factor $m^2 + 8m + 12$.</p> <p>Solution:</p> <ul style="list-style-type: none"> Find 2 numbers that multiply to 12 and add to 8. <div style="text-align: center;"> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td>6</td><td>2</td></tr> <tr><td>2</td><td></td></tr> </table> \times 12 </div> <p>$+ 8$</p> <p>$= (m+2)(m+6)$</p>	6	2	2		<p>54. Example 1</p> <p>Factor $m^2 + 9m + 14$.</p> <div style="text-align: center;"> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table> \times </div> <p>$+$</p> <p>$= (\quad)(\quad)$</p>					<p>55. Example 2</p> <p>Factor $a^2 - 8a + 12$.</p> <div style="text-align: center;"> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table> \times </div> <p>$+$</p> <p>$= (\quad)(\quad)$</p>					<p>56. Example 3</p> <p>Factor $m^2 - 5mn - 14n^2$.</p> <div style="text-align: center;"> <table border="1" style="display: inline-table; margin-right: 10px;"> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table> \times </div> <p>$+$</p> <p>$= (\quad)(\quad)$</p>				
6	2																		
2																			

Factor.

57. $x^2 - 46x + 45 =$

58. $x^2 - 9x - 36 =$

59. $x^2 + 6x - 16 =$

60. $b^2 - 5ab - 24a^2 =$

61. $g^2 + 11gh - 12h^2 =$

62. $w^2 - 7wx - 44x^2 =$

63. $2x^2 + 12x + 10 =$

64. $5x^2 + 25x + 30 =$

65. $-10x^2 + 20x + 150 =$

Challenge #17: Factor $6M^2 - 7M - 5$ three different ways.

Factor.

<p>Arrange in Descending powers of "M"</p> <p>Remove GCF</p> <p>Use Table</p> <p>Remember we need to find 2 #s that:</p> <ul style="list-style-type: none"> •Multiply to the 1st # times the last # •and adds to the middle # <p>Fill the Brackets</p> <ul style="list-style-type: none"> •Fill brackets with M² Coefficient and M •Fill Brackets and #s from Table <p>Divide out common Factors</p>	<p>66. START</p> $-7M-5+6M^2$ <p style="text-align: center;">↓</p> $6M^2-7M-5$ <p style="text-align: center;">↓</p> $6M^2-7M-5$ <p style="text-align: center;">↓</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td></td> <td style="text-align: right;">6x(-5)</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">1ST x Last</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">-10</td> <td style="border: 1px solid black; padding: 5px;">3</td> <td style="text-align: right;">-30</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">3</td> <td></td> <td style="text-align: right;">1x30</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">2x15</td> </tr> <tr> <td style="text-align: center;">+</td> <td style="text-align: center;">-7</td> <td style="text-align: right;">3x10</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">5x6</td> </tr> </table> <p style="text-align: center;">Adds to Middle</p> $(\quad)(\quad)$ <p style="text-align: center;">↓</p> $(6M \quad)(6M \quad)$ <p style="text-align: center;">↓</p> $(6M-10)(6M+3)$ <p style="text-align: center;">↓</p> $\frac{(6M-10)(6M+3)}{2 \quad 3}$ <p style="text-align: center;">(3M-5)(2M+1)</p>			6x(-5)			1 ST x Last	-10	3	-30	3		1x30			2x15	+	-7	3x10			5x6	<p>67. START</p> $-15 M^2-25M+10M^3$ <p style="text-align: center;">↓</p> $10M^3-15 M^2-25M$ <p style="text-align: center;">↓</p> $5M(2M^2-3M-5)$ <p style="text-align: center;">↓</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td></td> <td style="text-align: right;">2x(-5)</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">1ST x Last</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">-5</td> <td style="border: 1px solid black; padding: 5px;">2</td> <td style="text-align: right;">-10</td> </tr> <tr> <td style="border: 1px solid black; padding: 5px;">2</td> <td></td> <td style="text-align: right;">1x10</td> </tr> <tr> <td></td> <td></td> <td style="text-align: right;">2x5</td> </tr> <tr> <td style="text-align: center;">-</td> <td style="text-align: center;">-3</td> <td></td> </tr> </table> <p style="text-align: center;">Adds to Middle</p> $5M(\quad)(\quad)$ <p style="text-align: center;">↓</p> $5M(2M \quad)(2M \quad)$ <p style="text-align: center;">↓</p> $5M(2M-5)(2M+2)$ <p style="text-align: center;">↓</p> $\frac{5M(2M-5)(2M+2)}{2 \quad 2}$ <p style="text-align: center;">5M(2M-5)(M+1)</p>			2x(-5)			1 ST x Last	-5	2	-10	2		1x10			2x5	-	-3	
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<p>You are done 😊</p>																																									

68. Factor $2x^2 + 3x + 1 =$

(x+1)(2x+1)

69. Factor $2x^2 + 11x + 5 =$

70. Factor $3x^2 + 16x + 5 =$

71. Factor $6x^2 + 17x + 5 =$

72. Factor $10x^2 - 101x + 10 =$

73. Factor $-4x^2 - 11x - 6 =$

Factoring a Difference of Squares: $x^2 - y^2$

Challenge #18: Factor $m^2 - 4$.

Challenge #19: Factor $x^4 - 16$.

Can $x^2 + 4$ be factored?

Factor completely.

74. Factor $x^2 - 4 =$

Solution:

Remember that $x^2 - 4 = x^2 + 0x - 4$

So find two numbers that add to 0 and multiply to -4.

$(x+2)(x-2)$

75. Factor $x^2 - 100 =$

76. Factor $x^2 - y^2 =$

77. Factor $4x^2 - y^2 =$

78. Factor $9x^2 - 16y^2 =$

79. Factor $81x^2 - 144y^2 =$

80. Factor $x^4 - 16$

Solution:

Since x^4 & 16 are perfect squares factor the difference of square.

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

(x^2+4) Are there two numbers that add to 0 and multiply to 4? No.

(x^2-4) Are there two numbers that add to 0 and multiply to -4? Yes.

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

81. Factor $x^4 - y^4$

82. Factor $81 - y^4$

Challenge #20: Simplify $\frac{x^2 + 6x + 8}{x + 2}$.

Challenge #21: Simplify $\frac{5x^3 + 10x^2 + 5x}{10x^2 + 50x}$

$$\frac{(x+1)^2}{2x+10} \text{ or } \frac{(x+1)^2}{2(x+5)}$$

What does simplify mean?

83. Simplify. $\frac{x^2 + 6x + 8}{x + 2}$

Solution: Factor the top and reduce.

$$\frac{(x+4)(x+2)}{x+2}$$

$$\frac{(x+4)\cancel{(x+2)}}{\cancel{x+2}}$$

$x+4$

84. Simplify. $\frac{x^2 + 6x + 5}{x + 5}$

85. Simplify. $\frac{x^2 + 8x + 15}{x + 5}$

86. Simplify. $\frac{x^3 + 2x^2 + 1x}{x^2 + x}$

Challenge #22: Solve $4(m-1)+2=3(2m-1)+1$

Challenge #23: Solve $\frac{3}{4}(m-1)+4=6$

$\frac{11}{3}$

0

The rules to solve any equation:

- Eliminate Fractions by multiplying both sides by the common denominator.
- Eliminate brackets by Expanding.
- Collect Like Terms on each side of the equal sign.
- Get variables to same side by Subtracting or Adding variables to each side.
- Get constants to same side by Subtracting or Adding constants to each side.
- Isolate the variable by Dividing both sides by the coefficient.

The acronym is FELTSAD*. Some people have felt sad until they figure out how to solve the equation. *(Apply from left to right. The F and E can be applied in any order. The S and A can be applied in any order). Here is an example of this.

	$2(m-1) + \frac{5m}{2} = \frac{2}{3}(m+3)$	<i>This is a very difficult question. You will be able to do this at the end of this unit.</i>
F	$\left[2(m-1) + \frac{5m}{2} = \frac{2}{3}(m+3) \right] \times 6$	Fractions. Multiply each side by 6.
E	$12(m-1) + \frac{30m}{2} = \frac{12}{3}(m+3)$ $12(m-1) + 15m = 4(m+3)$	Expand. Eliminate the brackets.
LT	$12m - 12 + 15m = 4m + 12$	Like Terms. Collect like terms on the left side.
S	$27m - 12 = 4m + 12$	Subtract. Subtract 4m from both sides.
A	$23m - 12 = 12$	Add. Add 12 to both sides.
D	$23m = 24$	Divide. Divide both sides by 23.
	$m = \frac{24}{23}$	Check your answer. This answer would be best checked with a calculator.

Solve each of the equations.

87. $4(m-1)-6m=-10(2m-1)-1$

88. $3(m-1)+6m=5(2m-1)+1$

89. $2(m+1)+4m=4(m-2)+6.$

$\frac{13}{18}$

1

-2

90. $-2(m-1)+2=3(2m-1)+1$

91. $\frac{5m+2}{2} = \frac{3m-1}{3}$

92. $\frac{m+5}{4} = \frac{2m+4}{5}$

$\frac{3}{4}$

$-\frac{8}{9}$

3

93. $\frac{m}{4} + 5m = \frac{1}{2}m + 2$

94. $\frac{3m-2}{4} = \frac{-m+1}{3}$

95. $\frac{5}{2}(m-2) + 2 = 5$

$\frac{8}{19}$

$\frac{10}{13}$

$\frac{16}{5}$

Challenge #24: Solve for m. $A(M+N)=AB$

Write down the steps to solve this problem.

Write your answer in two equivalent forms.

Solve for M.

96. $A(M+N)=AB$

97. $5M+2N=6B$

98. $2A(M-N)=8$

99. $4N(A+M)=10$

100. $A(N-M)=AB$

101. $5M-2N=6B$

102. $-2A(M-N)=8$

103. $8N(M + A)=20$

Challenge #25: Simplify $\sqrt{12}$

Challenge #26: Simplify $\sqrt{75} + \sqrt{12}$

What are the first 12 perfect squares?

1

4

144

Simplify the following radicals.

104. $\sqrt{12}$

Think→What is the biggest perfect square that goes into 12?

$$= \sqrt{4} \cdot \sqrt{3}$$

$$= 2\sqrt{3}$$

105. $\sqrt{40}$

106. $\sqrt{75}$

107. $\sqrt{27}$

108. $\sqrt{12} + \sqrt{75}$

Solution: Radicals must be like radicals to add.

$$= \sqrt{4 \times 3} + \sqrt{5 \times 3}$$

$$= 2\sqrt{3} + 5\sqrt{3}$$

Since these are like radicals, add coefficients.

$$= 7\sqrt{3}$$

109. $5\sqrt{12} + 2\sqrt{75}$

110. $\sqrt{24} - 5\sqrt{6}$

111. $-3\sqrt{20} - \sqrt{45}$

112. $\sqrt{75} \times \sqrt{32}$

$$= 5\sqrt{3} \times 4\sqrt{2}$$

$$= 20\sqrt{6}$$

113. $\sqrt{24} \times \sqrt{3}$

114. $\sqrt{10} \times \sqrt{20}$

115. $\sqrt{24} \times \sqrt{27}$

Simplify the following.

116. $x = \frac{5 \pm 10\sqrt{3}}{5}$

117. $x = \frac{5 \pm 10\sqrt{3}}{10}$

118. $x = \frac{-5 \pm 10\sqrt{3}}{5}$

119. $x = \frac{5 \pm \sqrt{25}}{5}$

$1 + 2\sqrt{3}$ & $1 - 2\sqrt{3}$

The Exponent Laws

Exponent Laws	Why do they work?
$m^x \times m^y = m^{x+y}$	$m^6 \times m^3$ $(mmmmmm)(mmm)$ m^9
$m^x \div m^y = m^{x-y}$	$m^6 \div m^3$ $\frac{mmmmmm}{mmm}$ m^3
$(m^x)^y = m^{xy}$	$(m^5)^3 = (m^5)(m^5)(m^5) = m^{15}$
$(mn)^x = m^x n^x$	$(mn)^3 = (mn)(mn)(mn) = m^3 n^3$
$\left(\frac{m}{n}\right)^x = \frac{m^x}{n^x}$	$\left(\frac{m}{n}\right)^3 = \left(\frac{m}{n}\right)\left(\frac{m}{n}\right)\left(\frac{m}{n}\right) = \frac{m^3}{n^3}$
$m^0 = 1$	$5^0 = 1$
$m^{-x} = \frac{1}{m^x}$	$m^{-3} = \frac{1}{m^3}$
$\left(\frac{m}{n}\right)^{-x} = \frac{n^x}{m^x}$	$\left(\frac{n}{m}\right)^{-2} = \frac{m^2}{n^2}$

Simplify and write without brackets.

120. $(2M^5)(5M^6) =$

Solution:

- Multiply Coefficients
- Multiply Powers
- $(2M^5)(5M^6) =$
- $= 2 \times 5 \times M^5 M^6$

$= 10M^{11}$

121. $(3M^5)(4M^6) =$

122. $(-3M^2)(-M^2) =$

123. $\frac{M^5 M^3}{M^4} =$

124. $\frac{M^{50} M^3}{M^{40}} =$

125. $\frac{M^2 M^7}{M^5} =$

126. $\frac{M^5 M^3}{M^4} \times \frac{M^2 M^4}{M^3} =$

127. $M^5 M^6 \times \frac{M^2 M^3}{M^7} =$

128. $\frac{m^2 m^8 (m^5)^2}{m^3 (m^2)^3} =$

129. $\frac{m^2 (m^8)^2 (m^5)^2}{m^3} =$

130. $\frac{4m^5 m^3 (m^3)^2}{6m^3 (m^2)^2} =$

Pretest answers.

1. -94	2. $-\frac{4}{5}$	3. $\frac{4b+5a}{ab}$	4. $\frac{2xm^3+x^2}{m}$	5. $(2x+1)(x+5)$	6. $x+1$	7. $\frac{16}{5}$	8. $-9\sqrt{5}$	9. $\frac{2m^7}{3}$
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Workbook Answers.

1.	2.	3.	4.	5.	6.
7.	8.	9.	10.	11.	12.
13.	14.	15.	16.	17.	18.
19.	20.	21.	22.	23.	24.
25. $\frac{3a+2b}{6}$	26. $\frac{5m-4n}{20}$	27. $\frac{3a-b}{9}$			28. $\frac{an+bm}{mn}$
29. $\frac{a+bm}{m^2}$	30. $\frac{m^2+n^3}{mn}$	31. $\frac{am^2+bn}{m^3n}$	32. $\frac{4b+5a}{ab}$	33. a^2-a-2	34. $b^2+9b+20$
35. $c^2-14c+33$	36. $d^2+15d+50$	37. $x^2-10x+25$	38. x^2+2x+1	39. x^2-25y^2	40. $9x^2-100y^2$
41. $2(x+3)$	42. $x^2(x+3)$	43. $-3y(2-y+y^2)$	44. $w(3w+4)$	45. $2x^3y^2z^3(x^2z-2y^3)$	46. $7^2(x^2+3+2x^4)$
47. $\frac{2x^2+4}{3x}$	48. $\frac{5x+x^2}{6}$	49. $\frac{-3x+x^2}{4}$	50. $\frac{10x^3m+2x}{5xm}$	51. $\frac{2xm^3+x^2}{m}$	52. $\frac{-3xm^3+6x^2m}{2}$
53. $(m+2)(m+6)$	54. $(m+2)(m+7)$				
55. $(a-2)(a-6)$	56. $(m-7n)(m+2n)$	57. $(x-45)(x-1)$	58. $(x-12)(x+3)$	59. $(x+8)(x-2)$	60. $(b-8a)(b+3a)$
61. $(g+12h)(g-h)$	62. $(w-11x)(w+4x)$	63. $2(x+5)(x+1)$	64. $5(x+3)(x+2)$	65. $-10(x-5)(x+3)$	
		66.	67.	68.	69. $(2x+1)(x+5)$
70. $(3x+1)(x+5)$	71. $(3x+1)(2x+5)$	72. $(x-10)(10x-1)$	73. $-(4x+3)(x+2)$		
	74. $(x+2)(x-2)$	75. $(x-10)(x+10)$	76. $(x-y)(x+y)$	77. $(2x-y)(2x+y)$	78. $(3x-4y)(3x+4y)$
79. $9(3x-4y)(3x+4y)$	80. $(x+2)(x-2)(x+4)$	81. $(x-y)(x+y)(x^2+y^2)$	82. $(3-y)(3+y)(9+y^2)$	83. $x+4$	84. $x+1$
85. $x+3$	86. $x+1$		87.	88.	89.
	90.		91.	92.	93.
94.	95.		96. $B-N$	97. $\frac{6B-2N}{5}$	98. $\frac{4}{A}+N$
99. $\frac{5}{2N}-A$	100. $N-B$	101. $\frac{6B+2N}{5}$	102. $\frac{-4}{A}+N$	103. $\frac{5}{2N}-A$	104. $2\sqrt{3}$
105. $2\sqrt{10}$	106. $5\sqrt{3}$		107. $3\sqrt{3}$	108. $7\sqrt{3}$	109. $20\sqrt{3}$
110. $-3\sqrt{6}$		111. $-9\sqrt{5}$	112. $20\sqrt{6}$	113. $6\sqrt{2}$	114. $10\sqrt{2}$
	115. $18\sqrt{2}$	116. $1\pm 2\sqrt{3}$	117. $\frac{1\pm 2\sqrt{3}}{2}$	118. $-1\pm 2\sqrt{3}$	119. 0 or 2
120. $10m^{11}$	121. $12m^{11}$	122. $3m^4$	123. m^4	124. m^{13}	125. m^4
126. M^7	127. m^9	128. m^{11}	129. m^{25}	130. $\frac{2m^7}{3}$	