

# Recall Math - v1

skills to know for your  
SAT ACT MCA

## Simple Numbers

1.  $\sqrt{25} = 5$

2. simplify  $\sqrt{32} = 4\sqrt{2}$

3. estimate  $\sqrt{65} = 8.1$

4.  $-6 * 7 = -42$

5.  $-5 + -9 = -14$

6.  $2^4 = 16$

7.  $-(-11) = 11$

8.  $-7(a-1) = -7a+7$

9.  $-(x-1) = -x+1$

10.  $2 + 4(5-1) = 18$

11.  $(-2)^2$  vs  $-2^2$  which is 4?  
 $(-2)^2$

12. long divide  $207 \div 9$

$$\begin{array}{r} 23 \\ 9 \overline{) 207} \\ \underline{18} \phantom{0} \\ 27 \\ \underline{27} \\ 0 \end{array} \quad \boxed{23}$$

13.  $.25 = \frac{?}{?} = ?\%$   $\frac{1}{4} = 25\%$

14.  $\frac{1}{5} = .?? = ?\%$   $.20 = 20\%$

15. Give the unit rate if the

data gathered was:  $\frac{27m}{3hr} = \frac{9 \text{ miles}}{1hr}$

27 miles per 3 hours

16.  $.8 \times .03 = .024$

17.  $-15[4] - 10, > < = ?$   $<$

18.  $2.5 \times 10^{-3} = ?$   $.0025$

19.  $\frac{2}{3} = \frac{n}{-12}$   $n = -8$

20.  $|-3| = ?$   $3$

21.  $-|-5| = ?$   $-5$

22.  $\sqrt{-36}$   $6i$

23.  $\sqrt{x^2}$   $|x|$

24.  $3\sqrt{7} + 9\sqrt{7} = 12\sqrt{7}$

## Principles of Exponents

25.  $a^0 = 1$

26.  $a^x a^y = a^{x+y}$

27.  $\frac{a^x}{a^y} = a^{x-y}$

28.  $(a^x)^y = a^{x \cdot y}$

29.  $(x+3)^2 = x^2 + 6x + 9$   
 $(x+3)(x+3)$

30.  $(3a^x)^2 = 9a^{2x}$

31. rewrite  $\sqrt{a}$  as  $a^{1/2}$

32.  $\sqrt[n]{a} = a^{1/n}$

33.  $\sqrt[n]{a^m} = a^{m/n}$

34.  $a^{-x} = \frac{1}{a^x}$

35.  $\sqrt[n]{\frac{a}{b}} = \left(\frac{a}{b}\right)^{1/n}$

36.  $a^{-1} = \frac{1}{a}$

## Fractions & Cancelling

37. simplify  $\frac{5a+a}{a} = 6$

38.  $\frac{2}{3}$  of 6 = 4

39.  $\left(\frac{1}{2}\right) + \left(\frac{3}{5}\right) = \frac{11}{10}$  or  $1\frac{1}{10}$

40.  $\left(\frac{1}{3}\right) \div \left(\frac{3}{4}\right) = \frac{4}{9}$

41.  $-\left(\frac{-1}{-5}\right) = -\frac{1}{5}$

42.  $\left(\frac{2}{3}\right) \times \left(\frac{6}{5}\right)^2 = \frac{4}{5}$

43.  $1\frac{2}{5} = \frac{?}{?}$   $\frac{7}{5}$

44. rewrite  $\frac{a+b}{c} = \frac{a}{c} + \frac{b}{c}$

45. rewrite  $\frac{3}{5}a = \frac{3a}{5}$

46.  $\frac{1}{\frac{1}{n}} = n$

47.  $\frac{8}{7}$  rewrite as mixed #  $1\frac{1}{7}$

48.  $\frac{20}{35}$  reduces to  $\frac{4}{7}$

$$49. a * \frac{b}{c} = \frac{ab}{c}$$

$$50. \frac{\frac{a}{b}}{\frac{c}{d}} = \frac{a}{b} \cdot \frac{d}{c} = \frac{ad}{bc}$$

$$51. \frac{a}{\frac{b}{c}} = a \cdot \frac{c}{b} = \frac{ac}{b}$$

$$52. (7) \left(\frac{2}{5}\right) = \frac{14}{5} \text{ or } 2\frac{4}{5}$$

### Factoring/Foiling

$$53. x^2 + 4x + 3 = (x+3)(x+1)$$

$$54. x^2 - 2x - 8 = (x-4)(x+2)$$

$$55. 6x^2 + 12x - 18 = 6(x^2 + 2x - 3) = 6(x+3)(x-1)$$

$$56. x^2 - 25 = (x-5)(x+5)$$

$$57. 3x^2 + 7x + 2 = (3x+1)(x+2)$$

$$58. \text{factor } ab + ac = a(b+c)$$

$$59. (x+2)(x-2) = x^2 - 4$$

$$60. (x+2)(x+3) = x^2 + 5x + 6$$

$$61. (x+4)^2 = x^2 + 8x + 16$$

### Variables

$$62. ab \times ab = (ab)^2 = a^2b^2$$

$$63. pb + pb = 2pb$$

$$64. 2x + 5 - 8x = -6x + 5$$

$$65. \text{rewrite } aaaa = a^4$$

$$66. \text{rewrite } aabb = a^2b^2$$

$$67. 3(m+b) = 3m+3b$$

$$68. -(2-x) = -2+x$$

$$69. 3a^2 + 7a^2 = 10a^2$$

$$70. 4a - 3a = a$$

$$71. -5a - 4a = -9a$$

$$72. 2(5x) = 10x$$

$$73. 10x^3 / 2x^3 = 5$$

$$74. \frac{12xy^2}{3x^3} = \frac{4y^2}{x^2} \text{ or } 4x^{-2}y^2$$

### Basic Equation/Ineq

$$75. \frac{2}{3} = \frac{n}{8} \quad 3n = 16 \quad n = \frac{16}{3} \text{ or } 5\frac{1}{3} \text{ or } 5.\bar{3}$$

$$76. 2a = 9 \quad a = \frac{9}{2} \text{ or } 4\frac{1}{2}$$

$$77. -a = 2 \quad a = -2$$

$$78. \frac{2}{3}n = 6 \cdot \frac{3}{2} \quad n = 9$$

$$79. 2n + 1 = 9n \quad 1 = 7n \quad n = \frac{1}{7}$$

$$80. n + 1 = n + 8 \quad \text{no solution}$$

$$81. \frac{n+3}{2} = \frac{n}{8} \quad 8(n+3) = 2n \quad 8n + 24 = 2n \quad 24 = -6n \quad n = -4$$

$$82. \frac{-3x}{3} \leq \frac{6}{3} \quad x \geq -2$$

$$83. |x| = 6 \quad x = \pm 6$$

$$84. |3x - 1| = 5$$

$$\begin{aligned} 3x - 1 &= 5 \\ 3x &= 6 \\ X &= 2 \end{aligned} \quad \begin{aligned} 3x - 1 &= -5 \\ 3x &= -4 \\ \text{or } -\frac{4}{3} \end{aligned}$$

85. Solve

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

$$X = 4, -5$$

86. Solve w/substitution

$$y = 2x - 7$$

$$2x - 7 = x - 5$$

$$x = 2$$

$$y = x - 5$$

$$X = 2$$

$$Y = -3$$

87. Solve w/elimination

$$-2x + 3y = 1$$

$$2x + 2y = 4$$

$$\begin{aligned} 5y &= 5 \\ 2(x+y) &= 2 \end{aligned}$$

$$\begin{aligned} X &= 1 \\ Y &= 1 \end{aligned}$$

88. Solve with the

quadratic formula:

$$0 = x^2 + 3x - 2 \quad \frac{-3 \pm \sqrt{3^2 - 4(1)(-2)}}{2(1)} = \frac{-3 \pm \sqrt{17}}{2}$$

89. Show all steps:

$$3\left(\frac{x}{3} - 2\right) + 1 = 5(x-2) - 4$$

$$x - 6 + 1 = 5x - 10 - 4$$

$$x - 5 = 5x - 14$$

$$-5 = 4x - 14$$

$$9 = 4x$$

$$X = \frac{9}{4} \text{ or } 2\frac{1}{4}$$

**Memorization**

90.  $10^2, 11^2, 12^2, 13^2, 14^2, 15^2$

100, 121, 144, 169, 196, 225

91.  $2^3, 3^3, 4^3, 5^3$

8, 27, 64, 125

92. number of feet in 1 mile

5,280

93. distance = rate \* ? time

94. 16 ounces = 1 pound

95. 52 weeks in year

96. 1 liter  $\approx$ ? quart(s) 1.06 or about

2 | 001

97. 1 in =  $\leftarrow$  cm 2.54

3 | 122

98. 1 pint of water = ? 2 cups = 1 lb.

4 | 37

**Trigonometry**

99. define Sin

opposite  
hypotenuse

**Functions**

100. define Cos

adjacent  
hypotenuse

101. define Tan

opposite  
adjacent

**Data Handling**

102. Mean of 3,3,4,6

4

103. Median of 3,3,4,6

3.5

104. Mode of 3,3,4,6

3

105. Range of 3,3,4,6

3

106. Outlier in 3,4,4,20.

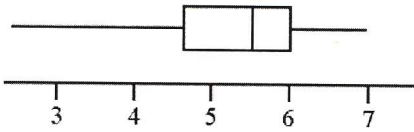
20

107. If outliers exist

then use median not mean.

108. This box & whisker

has what median? max?



median = 5.5 max = 7

109. This stem & leaf

113. sketch  $y = x$

114. sketch  $y = x^2$

115. sketch  $y = |x|$

116. sketch  $y = \sqrt{x}$

117. sketch  $y = x^3$

118. sketch  $y = 2^x$

119. When looking at

$y = -(x + 2)^2 - 3$

list transformations:  
Reflection over the x-axis  
Translated left 2, down 3

120. if  $f(x) = \frac{1}{x}$

what is domain  $f(x)$ ?

$(-\infty, 0) \cup (0, \infty)$

**Terminology**

121. Given a function

$f(x) = 3x^2 - 2x - 1$ , what

is its lead coefficient? 3

constant? -1

122. T/F You can use

a regression equation

as a line of best fit.

111. Which test will

tell you if a graph is a

function?

vertical line test

112. (2,3), (2,4),

(3,6), (4,9) is this

relation a function?

No

123. A radian is a  
measure of degrees  
which is about  $180/\pi$

124. A recursive  
sequence is as follows  
 $u_0 = 20$

$$u_n = u_{n-1} * 3$$

What is  $u_1 = 60$

125. Given a function

$$f(x) = x^2 - 2x - 1$$

Compute the

$$(-2)^2 - 4 \cdot 1 \cdot (-1) = 8$$

discriminant then tell  
how many solutions

$f(x)$  will have.

126. Domain is like  
the inputs(x), range is  
like outputs(y). T/F

127. Inverse of 4 = -4

128. Reciprocal of 4 =  $\frac{1}{4}$

129. Sum means: add

130. Difference means: Subtract

131. Product means: Multiply

132. Quotient means: Divide

133. Factors of 6: 1, 2, 3, 6

134. Rewrite this  
equation in standard

$$\text{form: } y = 2x - 5 \quad 2x - y = 5$$

135. Rewrite this  
equation in slope

$$\text{intercept form: } y = 2x - 7$$

$$2x - y = 7 \\ -y = -2x + 7$$

136. What form is  
this equation in?

$$(y - 2) = 4(x - 5) \quad \text{Point slope form}$$

137. What is the rate  
of growth or decay in

this exponential eqn? 10% growth

$$y = 4(1.1)^x$$

138.  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

is what formula?

Quadratic formula

139. Rational

numbers can be

written as a fraction.

140. Give an example

of an irrational #:  $\sqrt{2}$  or  $\pi$

141. List the first 4

prime numbers: 2, 3, 5, 7

142. Cross out the

non-integer on this

list: -5, 0, 2, 7.5, 20

143. If any even

integer is represented

as  $2n$ , what would any

odd integer be?  $2n+1$

144. If 2 consecutive

integers are  $n$  and

$n+1$ , what is the next

consecutive integer?  $n+1$

145. Old price for

gas = \$2.80. New = \$3

What is % of change?

$$7\% \text{ or } \frac{.20}{2.80}$$

$\frac{\text{Change}}{\text{Original}}$

**Geometry/formulas**

146. area of rectangle =  $b \cdot h$

147. area of triangle =  $\frac{1}{2}bh$

148. area trapezoid =  $h \left( \frac{b_1 + b_2}{2} \right)$  or  $\frac{1}{2}(b_1 + b_2) \cdot h$

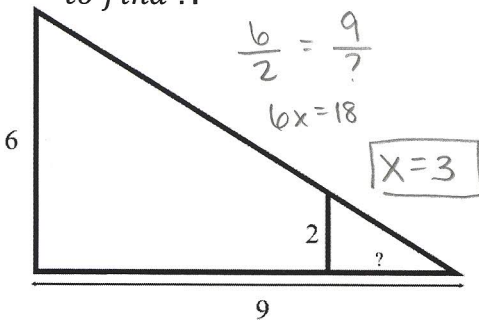
149. area of circle =  $\pi r^2$

150. Area formula for a parallelogram =  $b \cdot h$

151. Pythagorean thm:  $a^2 + b^2 = c^2$

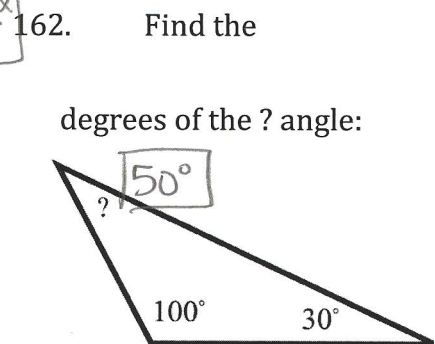
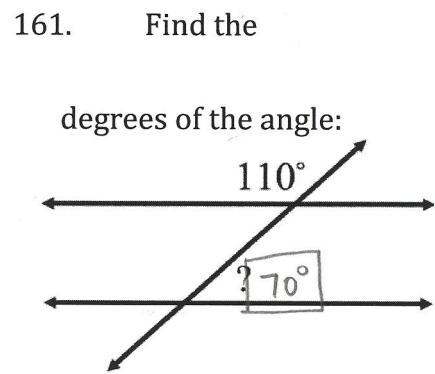
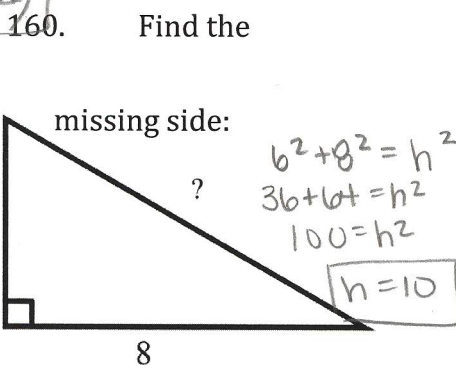
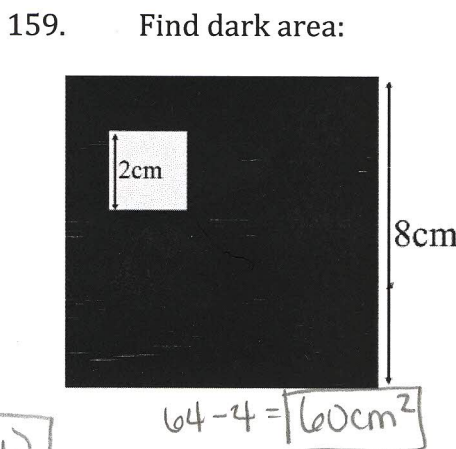
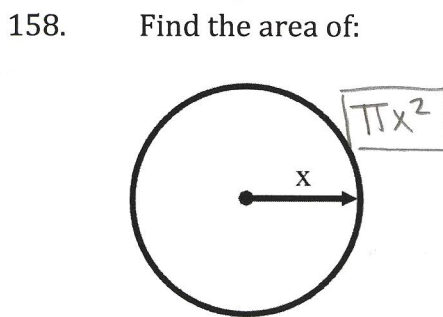
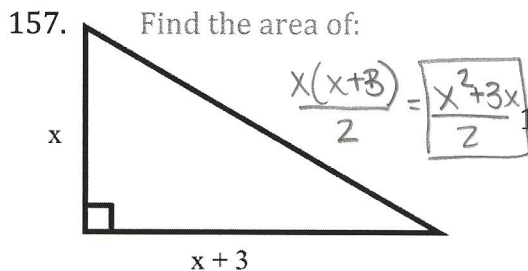
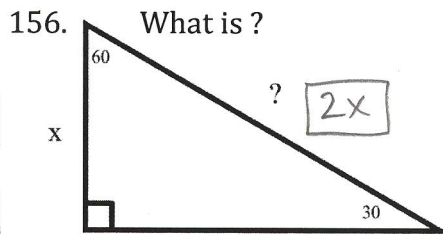
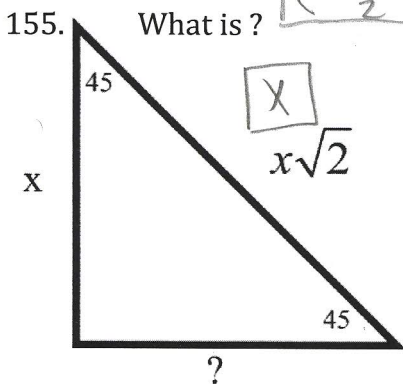
152. use proportional  $\Delta$ s

to find ?:



153. Distance Formula:  $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

154. Midpoint Formula:  $\left( \frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$



163. Could these 3 sides make a triangle: 1 in, 2 in, 3 in? **No**

164. If the circumference of a circle is  $8\pi$ , what is its diameter?  $2\pi r = 8\pi$ ,  $2r = 8$ ,  $d = 8$

165. A cube has a side length of 3 in. What is its surface area?  $(3 \cdot 3) = 9(6)$ ,  $54 \text{ in}^2$

**Probability**

166. Given a jar with 4 marbles, 3 red and 1 white, what is  $P(R,W)$  given no replacement.

$\frac{3}{4} \cdot \frac{1}{3} = \frac{3}{12} = \frac{1}{4}$

of meats and 4 kinds of cheese, how many pizzas can be made which have one meat and one cheese?

${}^3C_1 \cdot {}^4C_1$

167. Given a coin is flipped and a die is rolled. What's  $P(H,3)$ :

$\frac{1}{2} \cdot \frac{1}{6} = \frac{1}{12}$

172. Set up a  ${}^9C_2$  ...In a 5 card game with a 52 card deck, what  $p(3 \text{ kings and } 2$

$\frac{{}^4C_3 \cdot {}^4C_2}{{}^{52}C_5}$

queens) being dealt?

168. In which does order matter, Permutation or Combination?

Permutation

173. Just set up the binomial for this: Jim

has a 85% free throw average. In 4 shots what's the probability of missing exactly 2.

169. Set up a  ${}^9P_2$  for a race with 7 runners and 3 places.

${}^7P_3$

170. Set up a  ${}^9C_2$  for a committee made up of 3 people chosen from 20.

${}^{20}C_3$

171. Set up a  ${}^9C_2$  ...If there are 3 types

**Polynomials**

174. What is the degree of this?  $y = -5x^3 - 2x^2 - x + 7$

3rd

175. What is the degree of this?  $y = (x - 3)^2(x + 1)^3$

5th

176. Linear polynomials have what degree?

1st

177. Quadratic polynomials have what degree?

2nd

178. Cubic polynomials have what degree?

3rd

179. List the right end behavior of graph for  $y = -5x^2 - x + 7$

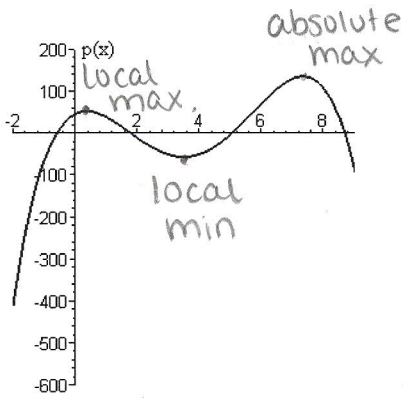
down to the right

180. What is the L and R end behavior of the graph of:

$y = 2x^3 - 2x^2 - x + 7$   
Down to the left  
Up to the right

181. Given graph of

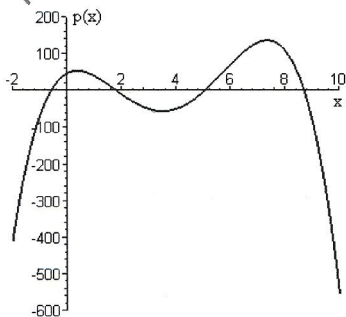
polynomial below



locate and label local mins, maxes.

182. Extrema refers to all local minimums and maximums. T/F

183. Given graph:



Does this have absolute min?

No

**Graphing**

184. define slope

rise over run

185. Given

$y = 2x + 1$  find 3

points on line.

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

186. A line parallel to

$y = 2x - 4$  has slope of? 2

187. A perpendicular

line to  $y = 2x - 4$  would  $-1/2$

have what slope?

188. Given slope -3

and y intercept = 5

write the equation:

$y = -3x + 5$

189. Given

point (3,2), Slope 2

Write the equation:

$(y-2) = 2(x-3)$   
or  
 $y = 2x - 4$

190. Given

$y - 4 = 3(x - 2)$

Identify a point & slope.

Point: (2,4) slope: 3

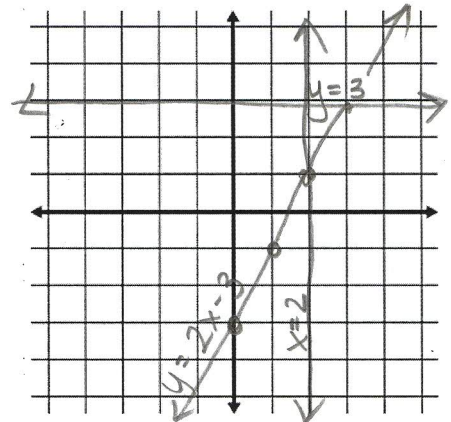
191. Given

point(3,2) point(4,6)

Find the slope:

$\frac{6-2}{4-3} = \frac{4}{1}$   
4

Use the following graph for the next three problems

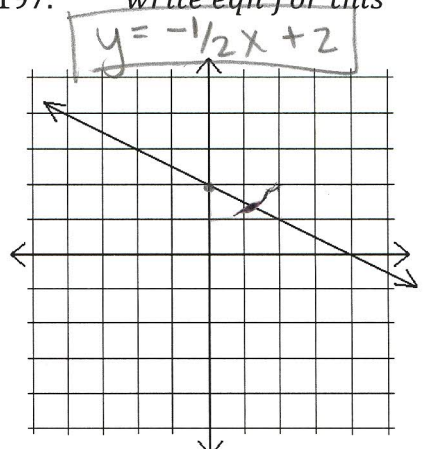


194. graph  $y = 3$

195. graph  $x = 2$

196. graph  $y = 2x - 3$

197. write eqn for this



198. Which axis is

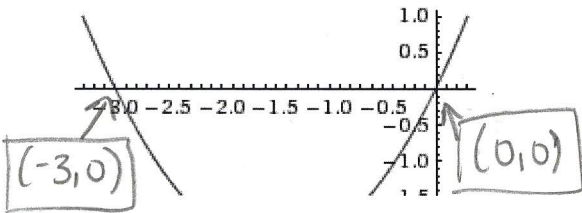
domain about, x or y?

X-axis

199. Identify and

label roots of the

quadratic graphed.

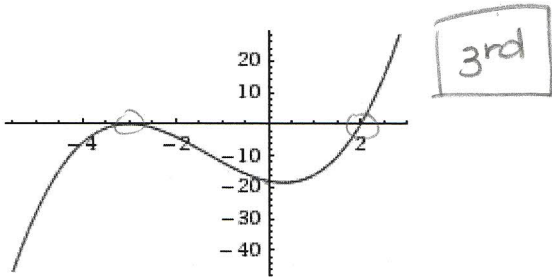


200. Identify

minimum degree of

the polynomial

graphed below.



201. The y intercept

is found where  $x = 0$

202. Sketch a graph

of exponential growth

