

Recall Math – v2

skills to know for your
SAT/ACT/MCA

Simple Numbers

1. $\sqrt{16} = 4$

2. simplify $\sqrt{8} \sqrt{2} \sqrt{4} = 2\sqrt{2}$

3. estimate $\sqrt{147} \approx 12$

4. $-4 * 7 = -28$

5. $-3 + -10 = -13$

6. $7^2 = 49$

7. $-(-3) = 3$

8. $-8(a - 4) = -8a + 32$

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

10. $3 + 5(2 - 1) = 8$

11. $(-1)^2$ vs -1^2 which is 1?

$(-1)^2$

12. long divide $303 \div 3$

$$\begin{array}{r} 101 \\ 3 \overline{)303} \\ \underline{-30} \\ 003 \\ \underline{-00} \\ 3 \\ \underline{-3} \\ 0 \end{array}$$

13. $.45 = \frac{?}{?} = ?\%$ $\frac{9}{20} = 45\%$

$\frac{45}{100}$

14. $\frac{1}{2} = .?? = ?\%$ $.5 = 50\%$

15. Give the unit rate if the

data gathered was: $\frac{100\text{mi}}{2\text{g.}} = \frac{50\text{mi}}{1\text{gallon}}$

100 miles per 2 gallons

16. $.6 \times .05 = .03$

17. $-17[<] - 13, ><=?$

18. $2 \times 10^{-4} = ?$ $.0002$

19. $\frac{2}{-5} = \frac{n}{15}$ $n = -6$

20. $|-10| = ?$ 10

21. $-|-2| = ?$ -2

22. $\sqrt{-81} = \pm 9i$

23. $\sqrt{w^2} = |w|$

24. $\sqrt{7} + 9\sqrt{7} = 10\sqrt{7}$

Principles of Exponents

25. $p^0 = 1$

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

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

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

29. $(x + 8)^2 = x^2 + 16x + 64$

30. $(4a^m)^2 = 16a^{2m}$

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

32. $\sqrt{a} = a^{1/2}$

33. $a^m/n = a^{m/n}$

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

35. $\sqrt{\frac{w}{k}} = \left(\frac{w}{k}\right)^{1/2}$

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

Fractions & Cancelling

37. simplify $\frac{8a+a}{a} = \frac{9a}{a} = 9$

38. $\frac{3}{4}$ of 8 = 6

39. $\left(\frac{1}{4}\right) + \left(\frac{3}{5}\right) = \frac{17}{20}$

40. $\left(\frac{1}{7}\right) \div \left(\frac{3}{4}\right) = \frac{4}{21}$

41. $-1 \left(\frac{1}{-9}\right) = \frac{1}{9}$

42. $\left(\frac{2}{4}\right) \times \left(\frac{6}{5}\right)^3 = \frac{6}{20} = \frac{3}{10}$

43. $2\frac{2}{7} = \frac{16}{7}$

44. rewrite $\frac{q+c}{c} = \frac{q}{c} + 1$

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

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

47. $\frac{8}{5}$ rewrite as mixed # $1\frac{3}{5}$

48. $\frac{15}{35}$ reduces to $\frac{3}{7}$

$$49. u * \frac{b}{c} = \frac{ub}{c}$$

$$50. \frac{r}{s} \cdot \frac{d}{ay} = \frac{rd}{by}$$

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

$$52. (6) \left(\frac{2}{4}\right) = 3$$

Factoring/Foiling

$$53. x^2 + 6x + 5 = (x+5)(x+1)$$

$$54. x^2 - 3x - 10 = (x-5)(x+2)$$

$$55. 3x^2 + 6x - 9 = 3(x^2 + 2x - 3) = 3(x+3)(x-1)$$

$$56. x^2 - 49 = (x+7)(x-7)$$

$$57. 3x^2 + 8x + 4 = (3x+2)(x+2)$$

$$58. \text{factor } eb + ec = e(b+c)$$

$$59. (x+5)(x-5) = x^2 - 25$$

$$60. (x+4)(x+3) = x^2 + 7x + 12$$

$$61. (x+7)^2 = x^2 + 14x + 49$$

Variables

$$62. wb \times wb = (wb)^2$$

$$63. qb + qb = 2qb$$

$$64. 3x + 6 - 8x = -5x + 6$$

$$65. \text{rewrite } aaaaa = a^5$$

$$66. \text{rewrite } aaabb = a^3b^2$$

$$67. 2(t+b) = 2t+2b$$

$$68. -(3-m) = m-3$$

$$69. 9a^2 + 7a^2 = 16a^2$$

$$70. 7a - 3a = 4a$$

$$71. -6a - 5a = -11a$$

$$72. 2(9x) = 18x$$

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

$$74. \frac{10xy^7}{8x^3} = \frac{5y^7}{4x^2}$$

Basic Equation/Ineq

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

$$76. 2a = 11 \Rightarrow a = \frac{11}{2} \text{ or } 5\frac{1}{2}$$

$$77. -r = -2 \Rightarrow r = 2$$

$$78. \frac{2}{7}n = 2 \Rightarrow n = 7$$

$$79. 3p + 1 = 5p \Rightarrow 1 = 2p \Rightarrow p = \frac{1}{2}$$

$$80. n + 6 = n - 8 \Rightarrow 6 = -8 \Rightarrow \text{no solution}$$

$$81. \frac{n+6}{2} = \frac{n}{3} \Rightarrow 3(n+6) = 2n \Rightarrow 3n+18 = 2n \Rightarrow n = -18$$

$$82. -4x \leq 6 \Rightarrow x \geq -\frac{3}{2}$$

$$83. |x| = 1 \Rightarrow x = 1, -1$$

$$84. |8x - 1| = 2$$

$$8x - 1 = 2 \quad 8x - 1 = -2$$

$$8x = 3 \quad 8x = -1$$

$$x = \frac{3}{8} \text{ or } -\frac{1}{8}$$

$$85. \text{Solve}$$

$$0 = (x-1)(x+10)$$

$$x = 1, -10$$

$$86. \text{Solve w/substitution}$$

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

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

$$y = x - 5 \Rightarrow x = 2, y = -3$$

$$87. \text{Solve w/elimination}$$

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

$$2x + 2y = 4$$

$$\frac{5y = 5}{y = 1}$$

$$x + y = 2 \Rightarrow x = 1, y = 1$$

$$88. \text{Solve w/elimination}$$

$$-5 \pm \frac{\sqrt{25 - 4(1)(-4)}}{2(1)}$$

$$\text{quadratic formula}$$

$$-5 \pm \frac{\sqrt{41}}{2}$$

$$89. \text{Show all steps:}$$

$$2\left(\frac{x}{4} - 1\right) + 9 = 6(2x - 3)$$

$$\frac{x}{2} - 2 + 9 = 12x - 18$$

$$\frac{x}{2} + 7 = 12x - 18$$

$$7 = 11.5x - 18$$

$$25 = \frac{23}{2}x$$

$$50 = 23x$$

$$x = \frac{50}{23} \text{ or } 2\frac{4}{23}$$

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 1

97. 1 in = ___ cm 2.54

98. 1 pint of water = ? 2 cups

Trigonometry

99. define Sin $\frac{\text{opposite}}{\text{hypotenuse}}$

100. define Cos $\frac{\text{adjacent}}{\text{hypotenuse}}$

101. define Tan $\frac{\text{opposite}}{\text{adjacent}}$

Data Handling

102. Mean of 2,2,3,9 $\frac{16}{4} = 4$

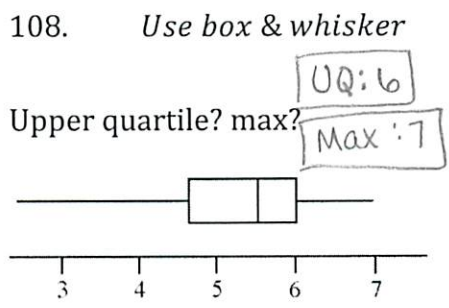
103. Median of 2,2,3,9 2.5

104. Mode of 2,2,3,9 2

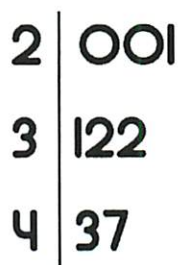
105. Range of 2,2,3,9 $9-2 = 7$

106. Outlier in 1,7,8,8 1

107. If outliers exist then use median not mode.



109. This stem & leaf



Has what minimum? 20

Functions

110. Evaluate $f(3) = 23$

111. If you

superimpose a vertical line test

vertical line onto a graph and it touches twice is it a function? **No it is not a function**

twice is it a function?

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

(3,6), (4,9) is this **No**

relation a function?

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. What is the minimum? $y = -(x-4)^2 + 6$
 Reflected across x-axis
 Translated Right 4
 Up 6
 list transformations: Up 6

120. if $f(x) = \frac{1}{x}$
 $(-\infty, 0) \cup (0, \infty)$

Terminology

121. Given a function

$f(x) = -4x^2 - 2x + 9$

what is its lead

coefficient?, constant?

coeff: -4
 constant: 9

122. T/F You can use a regression equation as a line of best fit

True

123. A radian is a measure of degrees which is about 180/?

π

124. A recursive sequence is as follows

$$u_0 = 30$$

$$u_n = u_{n-1} + 2$$

What is $u_1 =$ 60

125. Given a function

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

$$\frac{(-3)^2 - 4(-2)(-1)}{9 - 8}$$

Compute the

1

discriminant then tell

2 real roots

how many solutions

$f(x)$ will have.

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

T

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 8: 1, 2, 4, 8

134. Rewrite this equation in standard form: $y = -4x + 2$

$$4x + y = 2$$

135. Rewrite this equation in slope

intercept form:

$$4x - 2y = 6$$
$$-2y = -4x + 6$$

$$y = 2x - 3$$

136. What form is this equation in?

$$(y - 8) = 2(x - 5)$$

Point-Slope Formula

137. What is the rate of growth or decay in this exponential eqn?

$$y = 4(2)^x$$

6% decay

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

is what formula?

Quadratic

139. Numbers that can be written as a

fraction are rational.

140. Give an example of an irrational # $\pi, e, \sqrt{7}, \dots$

141. List the first 3 prime numbers: 2, 3, 5

142. Cross out the non-integer on this list: -5, 0, 2, ~~$\frac{1}{2}$~~ , 20

143. If any odd integer is represented as $2n+1$, what would

the next odd integer be? 2n

144. If 2 consecutive integers are n and $n+1$, what is the next consecutive integer?

n+2

145. Old price for soap=\$2.80 New=\$3

What is % of change? $\frac{0.20}{2.80} =$

Geometry/formulas

146. area of rectangle = $l \cdot w$

147. area of triangle = $\frac{1}{2} b \cdot h$

148. area trapzoid = $\frac{1}{2} (b_1 + b_2) \cdot h$

149. area of circle = πr^2

150. Area formula for

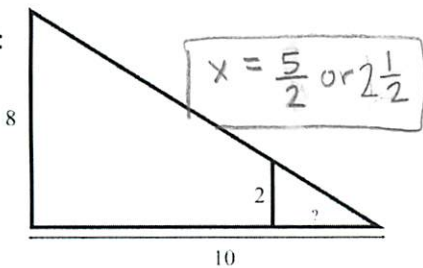
a parallelogram = $b \cdot h$

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

152. use similar Δ s

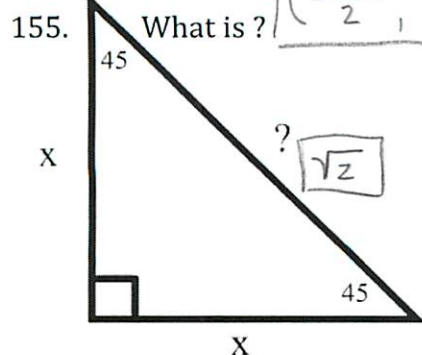
to find ?:

$\frac{2}{8} = \frac{x}{10}$
 $8x = 20$

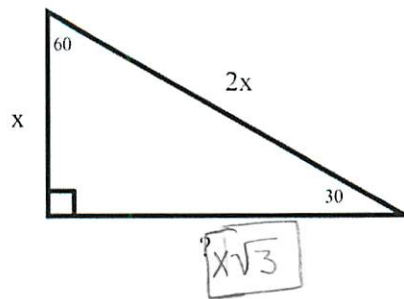


153. Distance Formula: $\sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2}$

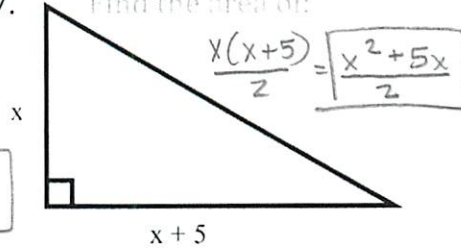
154. Midpoint Formula: $(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2})$



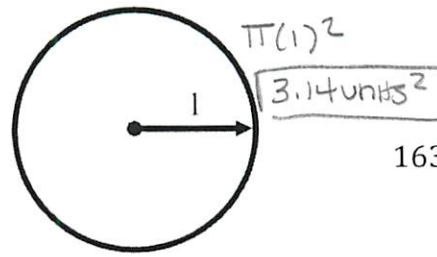
156. What is ?:



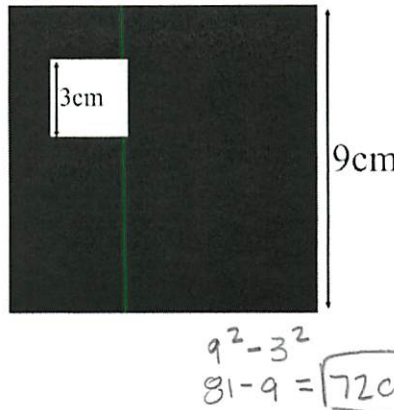
157. Find the area of:



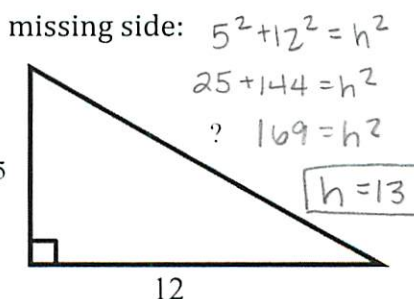
158. Find the area of:



159. Find dark area:

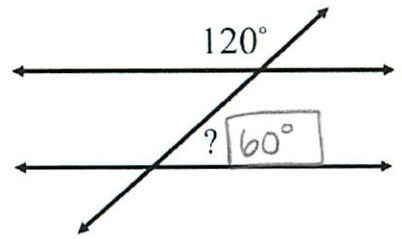


160. Find the



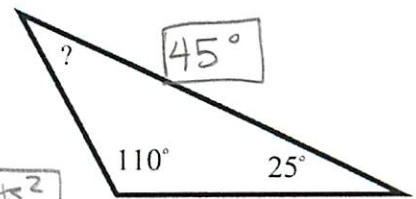
161. Find the

degrees of the angle:



162. Find the

degrees of the ? angle:



163. Could these 3

sides make a triangle:

3 in, 4 in, 8 in? No

164. If the

circumference of a

circle is 4π , what is

it's diameter?

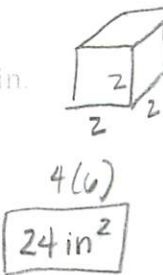
$C = \pi d$
 $4\pi = 4\pi$
 $d = 4$

165. A cube has a

side length of 2 in.

What is its

area?



Probability

166. Given a jar with

5 marbles, 3 red and 2 white, what is $P(R,W)$ given no replacement.

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

white, what is $P(R,W)$

given no replacement.

167. Given a coin is

flipped twice and a die is rolled. Find $P(H,T,3)$

$$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{6} = \frac{1}{24}$$

168. In which does

order NOT matter,

Permutation or **Combination** Combination?

→ 169. Set up a ${}_9P_4$

for a race with 9 runners and 4 places.

$${}_9P_4$$

170. Set up a ${}_{25}C_5$

for a committee made up of 5 people chosen from 25.

$${}_{25}C_5$$

171. Set up a ${}_{10}C_2$

...If there are 3 types

of Drinks and 4 kinds

of burgers, how many

meals can be made $4C_2 \cdot 3C_1$

which have one drink

and two burgers?

172. Set up a ${}_9C_2$

...In a 7 card game

with 4 Kings and 3 Queens) being dealt?

$$\frac{{}_4C_4 \cdot {}_3C_3}{{}_52C_7}$$

Queens) being dealt?

173. Just set up the

binomial for this: Jim

has a 90% free throw

average. In 3 shots

what's the probability

of making exactly 2

175. What is the

degree of this? **4th**

$$y = (x - 7)(x + 2)^3$$

176. Linear

polynomials are

degree **1st**?

177. Quadratic

polynomials are

degree **2nd**?

178. Cubic

polynomials are

degree **3rd**.

179. List the right

end behavior of graph

for $y = x^2 - x + 7$

up to the right

180. What is the

and R end behavior of

the graph of:

$$y = 2x^4 - 2x^2 - x + 7$$

up to the right

Polynomials

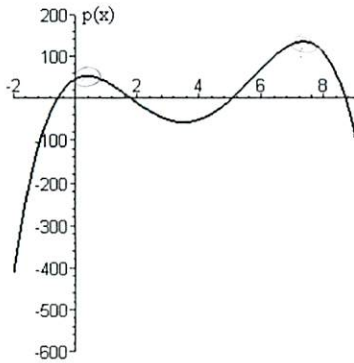
174. What is the

degree of this? **4th**

$$y = -x^4 - 2x + 8$$

181. Given graph of

polynomial below



How many local

maxes does it have?

2

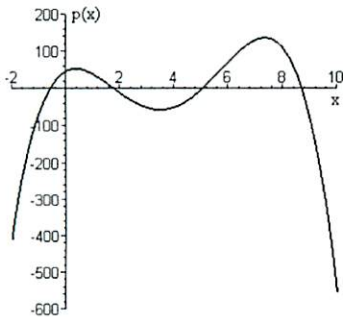
182. The word for all

local minimums and

maximums is

extremes

183. Given graph:



Does this have absolute max?

Yes

Graphing

184. rise over run is:

Slope

185. Given

$y = 5x + 2$ find 3

points on the line.

x	y
-2	-8
-1	-3
0	2
1	7
2	12

186. $y = 2x + 3$ and

$y = 2x - 4$ are **parallel**

lines?

187. A perpendicular

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

would have what

slope? **-2**

188. Given slope -4

and y intercept = 10

write the equation:

$y = -4x + 10$

189. Given

point (-5,2), Slope 3

Write the equation:

$(y-2) = 3(x+5)$

190. Given

$y - 8 = -2(x + 3)$

**Slope: -2
Point: (-3,8)**

Identify a point & slope.

191. Given point

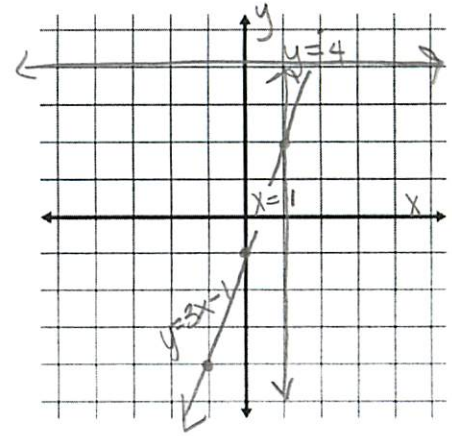
$(2,2)$ and point $(-4,5)$

Find the slope: $\frac{5-2}{-4-2} = \frac{3}{-2}$

$-\frac{3}{2}$

Use the following graph for

the next three problems



192. label X axis

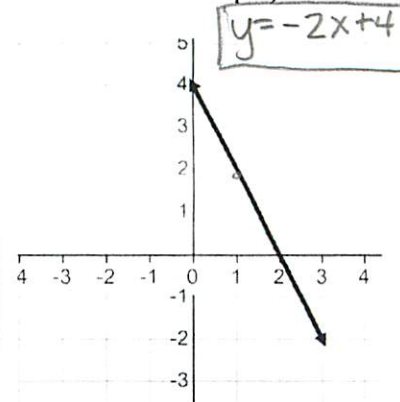
193. label Y axis

194. graph $y = 4$

195. graph $x = 1$

196. graph $y = 3x - 1$

197. write eqn for this



198. Which axis is

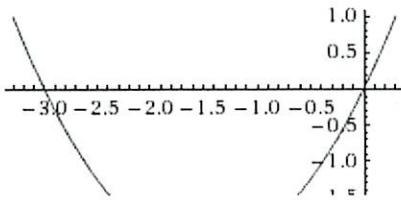
Range about, x or y?

y-axis

199. Identify the

solutions of the

quadratic graphed.



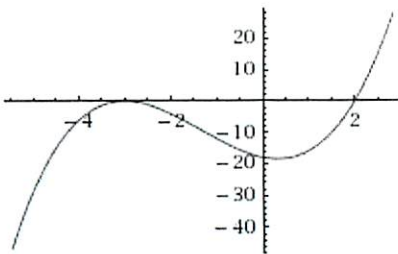
(0,0) (-3,0)

200. The polynomial

graphed below has a

single root at 2 and a

double at -3.



201. The x intercept

is found where $y =$

0

202. A graph that is

increasing at an

increasing rate would

demonstrate exponential

growth.