

# Answer Key

1. A  
6  
Pascal triangle  
121  
1331  
14641
2. C  
 $14 \times 3 = 42$   
 $15 \times 3 = 45$   
 $16 \times 3 = 48$
3. C  
61  
 $1 + 4 = 5$   
 $5 + 8 = 13$   
 $13 + 12 = 25$   
 $25 + 16 = 41$   
 $41 + 20 = 61$
4. D  
24 +4, -2, +5, 4, -2, +5, +4
5. A  
 $5^3 = 125$
6. A  
 $32 + 5 = 37$
7. B  
155  
 $1st \times 2nd + 1$
8. D  
11  $12/3 = 4$ ,  $21/3 = 7$ ,  $33/3 = 11$
9. A  
 $-0.33 - 0.11 = -0.44$
10. D  
 $10 + 5 = 15$   
 $15 + 10 = 25$   
...  
 $60 + 25 = 85$
11. B  
0.1875
12. C  
 $7 + 27 = 34$
13. B  
12345  
swap and rotation
14. D  
 $34 + 6 = 40$
15. B  
 $5 + 8 = 13$
16. B  
 $1 + 5^0 = 2$
17. A  
102  
 $1 \times 2 + 3 = 6$   
 $2 \times 3 + 6 = 12$   
 $3 \times 6 + 12 = 30$   
 $6 \times 12 + 30 = 102$
18. B  
 $2^3 = 8$
19. C  
6, 7, 8  
3, 4, 5
20. C  
 $48 + 12 = 60$
21. D
22. B
23. D
24. B  
In each row, the second figure is obtained by rotating the first figure through  $90^\circ$  CW or  $90^\circ$  ACW and adding a circle to it. Also, the third figure is obtained by adding two circles to the first figure (without rotating the figure).
25. B  
 $236 \times 2 = 472$   
 $197 \times 2 = 394$   
therefore,  
 $418 \times 2 = 836$
26. A  
In each row, the central part of the first figure rotates either  $90^\circ$  CW or  $90^\circ$  ACW to form the central part of the second figure and the central part of the first figure rotates through  $180^\circ$  to form the central part of the third figure. Also, in each row, there are 3 types of side elements - rectangles, circles and triangles.
27. C
28. C  
Number of line segments
29. D
30. A
31. B
32. D
33. C  
The second figure is obtained from the first figure

## GT8 (Fall, 2018) Mock Exam 2

by moving the line segment to the opposite side of the square boundary and replacing it with two similar line segments. Also, the element in the lower-left corner gets replaced by two similar elements - one placed in the upper-left and the other placed in the lower-right corner.

34. D
35. C
36. D
37. A
38. A
39. D
40. B
41. D  
 $(4 + 10) \div 1 = 14$
42. D  
 $(1 + 4) \div 10 = 0.5$
43. D  
 $(10 + 1) \div 4 = 2.75$
44. C  
 $10 \div 5 \times 100 = 200$
45. C  
 $5 \div 10 \div 20 = 0.025$
46. D  
 $12 \div 1 - 4 = 8$
47. A  
 $25 - (10 + 5) = 10$
48. C  
 $5 \div 100 \times 10 = 0.5$
49. D  
 $15 + 5 - 2 - 10 = 8$
50. C  
 $4 + 3 + 2 \times 2 = 11$
51. D  
 $2 + 4 + 7 - 11 = 2$
52. C  
 $2 + 3 + 4 \times 2 = 13$
53. B  
 $4 + 10 - 2 \times 3 = 8$
54. A  
 $2 \times 2 \times 1 + 4 = 8$
55. B  
 $2 \times 4 \times 2 + 2 = 18$
56. C  
 $4 + 6 \div 2 \div 3 = 5$
57. B  
 $12 \div 1 \div 2 + 3 = 9$
58. A  
 $2 + 2 \times 8 \div 1 = 18$
59. C  
 $12 \div 2 \div 3 + 8 = 10$
60. A  
 $10 \times 4 \times 2 \div 8 = 10$
61. B  
 $12 \div 8 \div 2 + 3 = 3.75$
62. C  
 $(4 + 8 \div 2) \times 1 = 8$
63. B  
 $2 \times (2 \times 1 + 4) = 12$
64. B  
 $\sqrt{\sqrt{81} + \sqrt{64}} = 5$
65. C  
 $\sqrt{\sqrt{100} - 64} = \sqrt{6}$
66. B  
 The three above the line are all insects. The hamster and squirrel are rodents, so the correct choice is b because the mouse is also a rodent. The other three choices are not rodents.
67. A  
 In the relationship above the line, the saw and the nails are tools a carpenter uses. In the relationship below the line, the stethoscope and thermometer are tools a pediatrician uses.
68. C  
 A table made of wood could come from an oak tree. A shirt made of cloth could come from a cotton plant. Choice a looks like a reasonable answer if you apply the same sentence: "A shirt made of cloth could come from sewing." But this is not the same relationship as the one above the line. The oak and the cotton are both materials used to make the table and the shirt.
69. D  
 The words above the line show a continuum: Command is more extreme than rule, and dictate is more extreme than command. Below the line, the continuum is as follows: Sleep is more than doze, and hibernate is more than sleep. The other choices are not related in the same way.
70. A  
 A banquet and a feast are both large meals; a palace and a mansion are both large places of shelter.
71. B  
 A fence and a wall mark a boundary. A path and an alley mark a passageway.
72. C  
 The objects above the line are all things used by an artist. The objects below the line are all things used by a teacher.
73. B  
 The relationship above the line is that snow on a mountain creates conditions for skiing. Below the line, the relationship is that warmth at a lake creates conditions for swimming.

## GT8 (Fall, 2018) Mock Exam 2

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| <p>74. D<br/>Above the line, the relationship shows a progression of sources of light. The relationship below the line shows a progression of types of housing, from smallest to largest. Choice a is incorrect because a tent is smaller than a house. Choices b and c are wrong because they are not part of the progression.</p> <p>75. A<br/>The relationship above the line is as follows; apples are a kind of fruit; fruit is sold in a supermarket. Below the line, the relationship is: a novel is a kind of book; books are sold in a bookstore.</p> <p>76. D<br/>The tadpole is a young frog; frogs are amphibians. The lamb is a young sheep; sheep are mammals. Animal (choice a) is incorrect because it is too large a grouping; Animals include insects, birds, mammals, reptiles, and amphibians. Choices b and c are incorrect because they are not part of the progression.</p> <p>77. B<br/>Walk, skip, and run represent a continuum of movement: Skipping is faster than walking; running is faster than skipping. Below the line, the continuum is about throwing: Pitch is faster than toss; hurl is faster than pitch.</p> <p>78. C<br/>The honeybee, angel, and bat all have wings; they are capable of flying. The kangaroo, rabbit, and grasshopper are all capable of hopping.</p> <p>79. A<br/>Above the line, the relationship is as follows: A daisy is a type of flower, and a flower is a type of plant. Below the line, the relationship is as follows: A bungalow is a type of house, and a house is a type of building.</p> <p>80. B<br/>A petal is a part of a flower; a tire is a part of a bicycle.</p> <p>81. D<br/>A bristle is a part of a brush; a key is a part of a piano.</p> <p>82. A<br/>A group of fish is a school; a group of wolves is a pack.</p> <p>83. A<br/>An odometer measures distance; a scale measures weight.</p> <p>84. D<br/>Siamese is a kind of cat; romaine is a kind of lettuce.</p> <p>85. E<br/>A pedal propels a bicycle; an oar propels a canoe.</p> | <p>86. C</p> <p>87. C</p> <p>88. C</p> <p>89. B</p> <p>90. C</p> <p>91. C</p> <p>92. C</p> <p style="padding-left: 20px;">Both are 1.</p> <p>93. A</p> <p>94. A</p> <p>95. A</p> <p>96. B</p> <p>97. C</p> <p style="padding-left: 20px;"><math>66\frac{2}{3}\% = \frac{2}{3}</math></p> <p>98. A</p> <p>99. A</p> <p>100. B</p> <p>101. B</p> <p>102. C</p> <p>103. C</p> <p>104. B</p> <p style="padding-left: 20px;">A) <math>3 \times 12 = 36</math></p> <p style="padding-left: 20px;">B) <math>3 \text{ yd} = 9 \text{ ft} = \boxed{108}</math> inches</p> <p>105. D</p> <p>106. C</p> <p>107. B</p> <p>108. A</p> <p>109. C</p> <p>110. D</p> <p>111. C</p> <p>112. D</p> <p>113. D</p> <p>114. C</p> <p>115. C</p> <p>116. A</p> <p>117. D</p> <p>118. D</p> <p>119. D</p> <p>120. A</p> <p>121. B</p> <p>122. A</p> <p>123. B</p> <p>124. B</p> <p>125. B</p> <p>126. B</p> <p style="text-align: center;">33 Hint: <math>63 - 2x</math></p> |
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## GT8 (Fall, 2018) Mock Exam 2

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| <p>127. C<br/>23 Hint: <math>2x+1</math></p> <p>128. D<br/>29 Hint: <math>(x+11)/3</math></p> <p>129. B<br/>21 Hint: <math>(x+11)/3</math></p> <p>130. B<br/>43 Hint: <math>(4x+1)/3</math></p> <p>131. B<br/>18 Hint: <math>3x/2</math></p> <p>132. A<br/>58 Hint: <math>3x-11</math></p> <p>133. D<br/>10 Hint: <math>(x - 10)/3</math></p> <p>134. A<br/>108 Hint: <math>4x-4</math></p> <p>135. B<br/>47 Hint: <math>x + 7</math></p> <p>136. D<br/>57 Hint: <math>4x-3</math></p> <p>137. A<br/>32 Hint: <math>2x - 2</math></p> <p>138. D<br/>10 Hint: <math>x/4</math></p> <p>139. A<br/>96 Hint: <math>4x</math></p> <p>140. B<br/>5 Hint: <math>2x-5</math></p> <p>141. C<br/>29 Hint: <math>(x + 2)/2</math></p> <p>142. A<br/>11 Hint: <math>x/3 - 4</math></p> <p>143. C<br/>3 Hint: <math>(x+1)/2</math></p> <p>144. D<br/>7 Hint: <math>(x - 10)/3</math></p> <p>145. D<br/>2 Hint: <math>(x+3)/4</math></p> <p>146. A</p> <p>147. A</p> <p>148. D</p> <p>149. B</p> <p>150. D</p> <p>151. A</p> <p>152. C</p> | <p>153. C</p> <p>154. A</p> <p>155. D</p> <p>156. B</p> <p>157. D</p> <p>158. D</p> <p>159. B</p> <p>160. D</p> <p>161. A</p> <p>162. B</p> <p>163. D</p> <p>164. B</p> <p>165. B</p> <p>166. C<br/>?<math>\square</math>=27, <math>\square</math>=9</p> <p>167. D<br/>?<math>\square</math>=9, <math>\square</math>=27</p> <p>168. B<br/>?<math>\square</math>= 42, <math>\square</math>= 27</p> <p>169. B<br/>?<math>\square</math>= 4, <math>\square</math>= 25</p> <p>170. A<br/>?<math>\square</math>= 14, <math>\square</math>= 15</p> <p>171. C<br/>?<math>\square</math>=12, <math>\square</math>=6</p> <p>172. A<br/>?<math>\square</math>= 18, <math>\square</math>= 6</p> <p>173. D<br/>?<math>\square</math>= 25, <math>\square</math>= 5</p> <p>174. B<br/>?<math>\square</math>= 27, <math>\square</math>= 9</p> <p>175. A<br/>?<math>\square</math>=42, <math>\square</math>=3</p> <p>176. C<br/>?<math>\square</math>=21, <math>\square</math>=3</p> <p>177. D<br/>?<math>\square</math>=42, <math>\square</math>=6</p> <p>178. D<br/>?<math>\square</math>=6, <math>\square</math>=6, <math>\star</math>=42</p> <p>179. C<br/>?<math>\square</math>=11, <math>\square</math>=14, <math>\star</math>=39</p> <p>180. D<br/>?<math>\square</math>=9, <math>\square</math>=70, <math>\star</math>=5</p> |
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