Kansas City Area Teachers of Mathematics
2017 KCATM Math Competition

STATISTICS and PROBABILITY
GRADE 6

INSTRUCTIONS

- **Do not open this booklet** until instructed to do so.
- Time limit: **20 minutes**
- You **may use calculators** on this test.
- Mark your answer on the answer sheet by **FILLING in the oval**.
- You **may not use rulers, protractors, or other measurement devices** on this test.
- Choice **E** can be a valid answer. It will indicate that the answer is "None of the above."

Student Name _____ Student Number _____

School _____

Suppose an experiment consists of drawing 1 slip of paper from a jar containing 12 slips of paper, each with a different month of the year written on it. Use this experiment to answer questions #101-103.

101. What is the probability that the drawn slip of paper will have a month of the year that begins with a J written on it?

A. 1/12 B. 1/4 C. 1/6 D. 1/3 E. None of the above

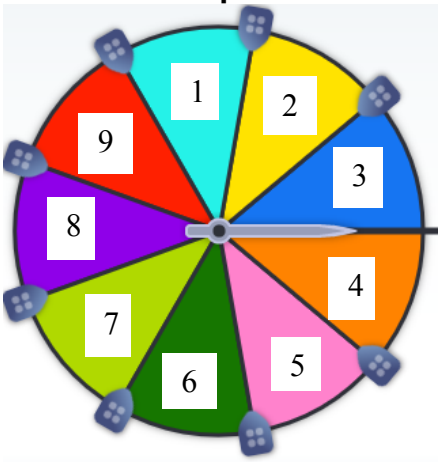
102. What is the probability that the drawn slip of paper will have a month of the year that begins with a M or N written on it?

A. 1/6 B. 1/2 C. 1/12 D. 1/4 E. None of the above

103. What is the probability that the drawn slip of paper will have the name of a month with exactly 4 letters?

A. 1/6 B. 1/4 C. 1/12 D. 1/3 E. None of the above

Consider one spin of the wheel. Use this spinner to answer questions #104-106.



104. What is the probability of spinning an even number?

A. 2/9 B. 3/9 C. 4/9 D. 5/9 E. None of the above

105. What is the probability of spinning a multiple of 2 or a multiple of 3?

A. 2/3 B. 5/9 C. 1/3 D. 4/9 E. None of the above

106. What is the probability of spinning a number greater than 7?

A. 3/9 B. 2/9 C. 7/9 D. 6/9 E. None of the above

#107-110: Use the number of jumps data recorded during a 6th grade jump-rope contest. Recorded is the number of jumps for each student.

25, 13, 28, 35, 28, 25, 40, 50, 43, 26, 15, 25, 40, 52, 60, 36

107. To the nearest jump, what is the **mean** of this data?

A. 40 B. 25 C. 34 D. 32 E. None of the above

108. What is the **median** of this data?

A. 46.5 B. 31 C. 31.5 D. 32 E. None of the above

109. What is the **mode** of this data?

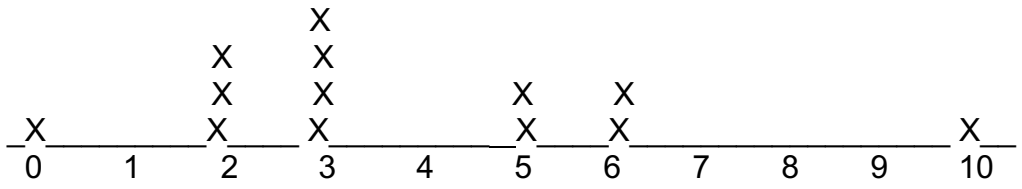
A. 25 B. 46.5 C. 31.5 D. 40 E. None of the above

110. What is the **range** of this data?

A. 20 B. 39 C. 75 D. 46 E. None of the above

For problems #111-112, use the line plot below.

Number of Children in a Household



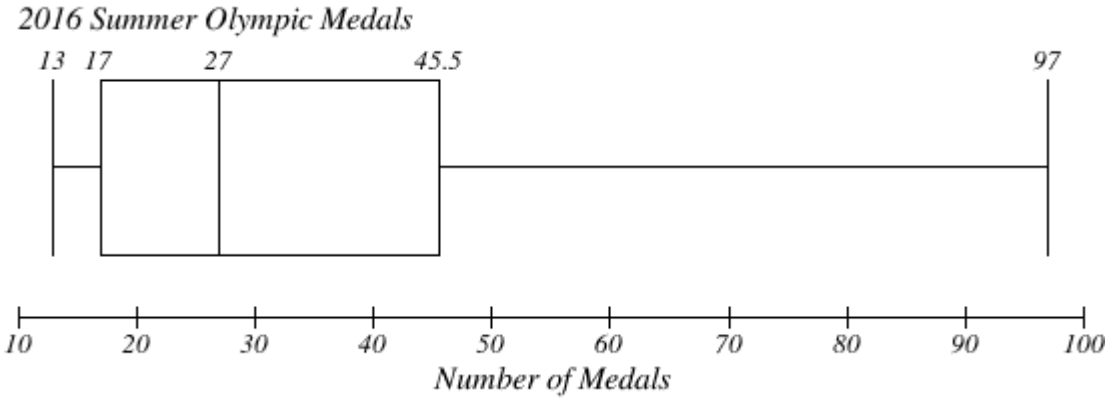
111. What is the **median** number of children for the 13 households?

A. 5 B. 3 C. 4 D. 5.5 E. None of the above

112. Which statistic would change if you added another 3 to the data set?

A. mean B. median C. range D. mode E. None of the above

#113-116: Use the box plot below that show the final medal standings for the <u>top 20 countries</u> during the 2016 Summer Olympics.



113. Which of the following can be determined from looking at the box plot?

A. mode, mean B. mode, range C. mean, median D. range, median E. None of the above

114. What is the **interquartile range** of the data?

A. 82 B. 32.5 C. 28.5 D. 70 E. None of the above

115. How many of the top 20 countries earned between 17 and 27 medals?

A. 5 B. 4 C. 10 D. 15 E. None of the above

116. Using the information on the box plot, which of the following is **<u>NOT true</u>** about this set of data?

A. The median of the data is 27.
B. There are more countries who earned more than 27 medals than those who earned less than 27.
C. Three-fourths of the top 20 countries earned 17 or more medals.
D. The range of medals earned is 84.
E. All are true.

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117. To receive an A in a class, Lucy needs at least a mean of 90 of five exams. Lucy's grades on the first four exams were 84, 95, 86, and 94. What **minimum score** does she need on the fifth exam to receive an A in the class?

A. 89 B. 90 C. 91 D. 92 E. None of the above

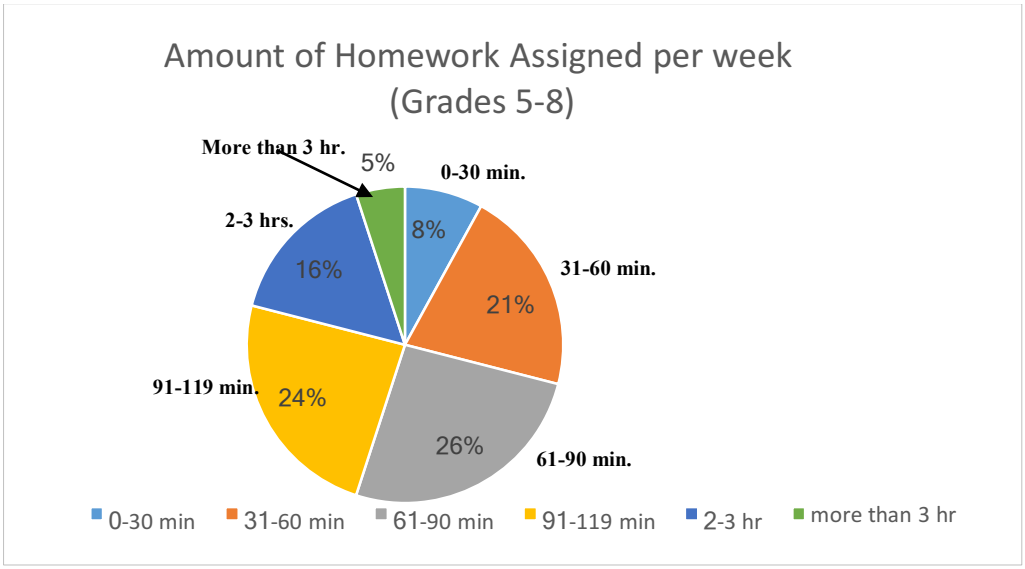
118. The youngest person in a company is 24 years old. The range of ages is 34 years. How old is the oldest person in the company?

A. 34 B. 58 C. 59 D. 68 E. None of the above

119. Two sixth-grade math classes took a test. There are 28 students in each class. The mean score in each class was 86%. The mean absolute deviation (MAD) of the scores in Class A was 9.2. The MAD of the scores in Class B was 4.3. Which of the following statements **MUST be true**?

A. There is more variability in the scores in Class A because the MAD shows a greater spread of the data in A than in the spread of B.
B. There is more variability in the scores of Class B because the MAD shows a greater spread of the data in B rather than in the spread of A.
C. The mean score in Class A will be higher than the mean score in Class B.
D. The mean score in Class B will be higher than the mean score in Class A.
E. None of the above MUST be true.

#120-121: Use the circle graph that shows the amount of homework assigned to middle school students.



120. What percentage of 5-8th graders were assigned more than 1 hour of homework per week?

A. 29% B. 26% C. 71% D. 13% E. None of the above

121. Fifty percent of students were assigned which given number of amounts of homework?

A. 0-30 min and 31-60 min
B. 31-60 min and 61-90 min
C. 61-90 min and 91-119 min
D. 2-3 hours and more than 3 hours
E. None of the above

122. Which of the following questions is NOT statistical?

A. What are the heights of my friends in the 6th grade class?
B. How old is my cat?
C. How many letters are in the capitals of the United States?
D. What types of books do my friends like?
E. None of the above.

#123-128 A bag contains 7 blue marbles, 3 green marbles, and 2 yellow marbles. Use this information to answer questions #123-128.

123. A marble is drawn, replaced, and then a second marble is drawn. What is the probability that both marbles are yellow?

A. 1/3 B. 2/12 C. 2/144 D. 1/36 E. None of the above

124. A marble is drawn and is NOT replaced. Then a second marble is drawn. What is the probability that both marbles are yellow?

A. 1/3 B. 4/144 C. 1/66 D. 1/72 E. None of the above

125. A marble is drawn, replaced, and then a second marble is drawn. What is the probability that a green marble is drawn and then a blue marble is drawn?

A. 21/144 B. 5/6 C. 21/24 D. 1/4 E. None of the above

126. What is the probability that a marble drawn is a primary color?

A. 9/12 B. 10/12 C. 5/12 D. 7/12 E. None of the above

127. A marble is drawn. What is the probability that the marble drawn is blue?

A. 1/4 B. 10/12 C. 5/12 D. 7/12 E. None of the above

128. A marble is drawn. What is the probability that the marble drawn is green or blue?

A. 1/4 B. 10/12 C. 5/12 D. 7/12 E. None of the above

Use the frequency table for questions **#129-132**. The frequency table shows the results of a survey of 7th grades who were asked the number of times they posted on snap chat the weekend before the survey was given.

Number of posts on snap chat	Frequency
0-5	2
6-10	5
11-15	10
16-20	7
21-25	2

129. How many students were surveyed?

A. 5 B. 24 C. 26 D. 30 E. None of the above

130. What is the probability a student will post to snap chat 10 times or less?

A. 7/26 B. 7/30 C. 7/24 D. 17/24 E. None of the above

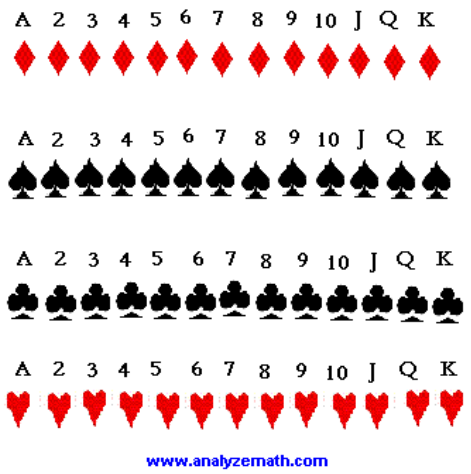
131. What is the probability a student will post to snap chat between 0 and 5 times?

A. 1/13 B. 1/12 C. 2/5 D. 1/15 E. None of the above

132. To the nearest percent, what is the probability a student will post to snap chat between 6 and 15 times?

A. 26% B. 20% C. 75% D. 58% E. None of the above

Use the standard deck of cards shown to answer problems #133-136.



133. How many cards are in a standard deck (see figure)?

A. 13 B. 26 C. 48
D. 52 E. None of the above

134. What is the probability of getting **a two, a three, or a four** out of the deck of cards?

A. 0.23 B. 0.10 C. 0.16
D. 0.06 E. None of the above

135. What is the probability of getting an **Ace of Diamonds?**

A. 1/13 B. 1/12 C. 1/48
D. 1/52 E. None of the above

136. What is the probability of getting a **Heart?**

B. 1/13 B. 1/4 C. 1/50
D. 1/26 E. None of the above

Use the table showing possible sums resulting from rolling two dice to answer problems #137-140.

137. What is the probability of getting a **sum greater than 7**?

A. 7/12 B. 5/12 C. 23/36 D. 1/2
E. None of the above

138. What is the probability of getting an **odd sum**?

A. 8/15 B. 1/3 C. 4/9 D. 1/2
E. None of the above

139. What is the probability of getting a **multiple of three**?

A. 5/18 B. 1/3 C. 1/2 D. 1/4 E. None of the above

140. What is the probability of getting a **factor of 10**?

A. 2/9 B. 1/3 C. 1/2 D. 1/4 E. None of the above