Kansas City Area Teachers of Mathematics
2015 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 "Not given."

Student Name _____ Student Number _____

School _____

Use the following chart for problems 101.-104.

Basketball players competing in a high school tournament had their heights measured and the results are displayed in the table below. The heights were recorded to the nearest whole inch.

Height	Less than 5'8"	5'8" to 5'10"	5'11" to 6'	6'1" to 6'2"	Over 6'2"
# of Players	4	7	21	8	5

101. How many players took part in the high school tournament?

   A. 38   B. 45   C. 54   D. 48   E. Not given

102. To the nearest percent, what is the probability that the player is over 6'2"?

   A. 29%   B. 9%   C. 11%   D. 12%   E. Not given

103. What is the ratio of players 6'1" or taller to players less than 5'8"?

   A. 13:4   B. 5:4   C. 2:1   D. 13:11   E. Not given

104. To the nearest percent, what is the probability that the player is 6' tall or under?

   A. 89%   B. 74%   C. 24%   D. 71%   E. Not given

Use these experiment outcomes to answer questions 105-107. During the experiment, four coins were tossed twelve times. The outcomes were:

HHHT	HTTT	THHT	HTHH	THHT	TTHH
HTHT	HTTH	TTTT	HHTT	HHHH	HHTH

105. Using the experiment, what was the probability of tossing two heads and two tails?
   A. 0.3   B. 0.4   C. 0.5   D. 0.6   E. Not given

106. What was the probability of tossing 4 heads or 4 tails?
   A. 1/2   B. 1/4   C. 1/3   D. 1/6   E. Not given

107. Based on the experiment, if the coins were tossed 200 times, about how many times would you expect 3 heads to be thrown?

   A. 25   B. 50   C. 100   D. 40   E. Not given

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108. You were calculating your grade before your last test of the quarter. Your first 4 tests were: 67%, 84%, 78%, and 90%. What would the minimum grade have to be on your 5th test score have to be if you want an average of at least 80%?

   A. 90%   B. 85%   C. 83%   D. 81%   E. Not given

Use the table below on the square footage of apartments for problems 109-111.

Apt. #	Sq. Footage
1	750
2	800
3	500
4	800
5	1000

109. What is the mean of the sq. footage of the apts.?

  A. 750   B. 800   C. 790   D. 770

  E. Not given

110. What is the mode of the sq. footage of the apts.?

  A. 800   B. 750   C. 500   D. 1000

  E. Not given

111. What is the median of the sq. footage of the apts.?

  A. 750   B. 800   C. 500   D. 1000   E. Not given

Use the table of average tuition costs for various Kansas colleges for problems 112-115. http://www.collegecalc.org/

Kansas College	Average Tuition 2014
KU	$9,225
KSU	$7,830
Wichita	$5,622
Emporia	$4,368
Baker	$25,200
Fort Hays State	$3,374
JCCC	$2,520
Mid-America	$21,200
Washburn	$5,688
Pittsburg State	$4,710

112. What is the **range** of the costs of colleges listed?

  A. $25,200   B. $22,680   C. $21,826

  D. $20,490   E. Not given

113. What is the **mode** of the costs?

  A. $800   B. $750   C. $500

 D. $1000   E. Not given

114. What is the **median** of the costs?

  A. $14,287   B. $800   C. $500

  D. $5655   E. Not given

115. The costs of private colleges is more than public schools because they have no state aid in paying their expenses. However, they often offer a greater number of scholarships to their students. Given the variety of costs shown in the table, what would be the **mean** cost of these colleges **to the nearest dollar?**

 A. $9971   B. $8158   C. $8,974   D. $7478   E. Not given

For problems 116-118, use the line graph of Caitlin's Height from Birth to age 8.
https://www.pinterest.com/pin/20618110763901812/
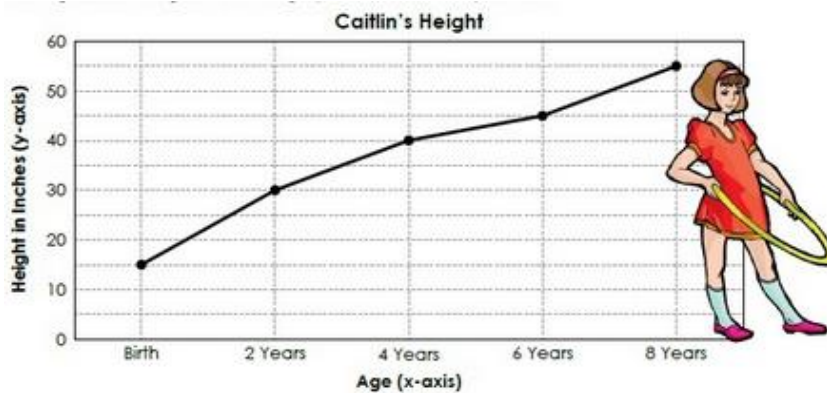

116. Between which two years did the **greatest amount** of growth take place?

   A. Birth-2   B. 2-4   C. 4-6   D. 6-8   E. Not given

117. Reading the graph, what would be Caitlin's **approximate height** at age 5?

   A. 40 in.   B. 43 in.   C. 45 in.   D. 48 in.   E. Not given

118. Use the graph to estimate what Caitlin's height might be at age 10.

   A. 55 in.   B. 60 in.   C. 65 in.   D. 70 in.   E. Not given

Use the survey results for the number of people using technology to do research in the table below for problems 119-120.
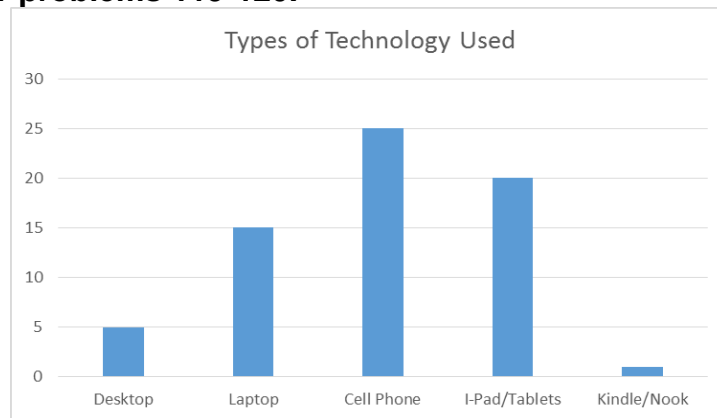


119. How many people took the survey?

   A. 25   B. 65   C. 66   D. 71   E. Not given

120. How many more people use cell phones compared to those using desktop or laptop computers?

   A. 5   B. 10   C. 15   D. 20   E. Not given

Use the Venn Diagram that shows the types of food eaten at a picnic for problems 121-123. http://www.mathworksheets4kids.com
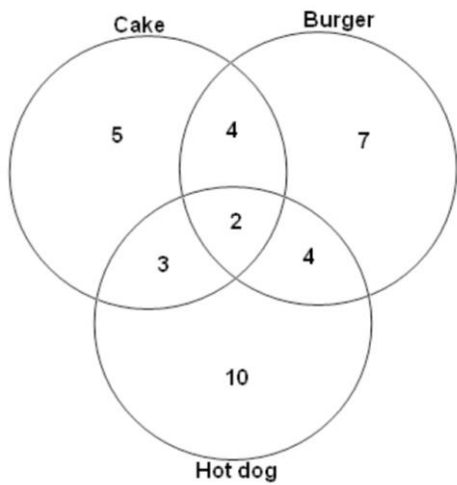
121. How many people ate something at the picnic?

     A. 22   B. 26   C. 35
     D. 36   E. Not given

122. How many people had **at least** two items?

     A. 11   B. 12   C. 10
     D. 13   E. Not given

123. How many people had all three food items?

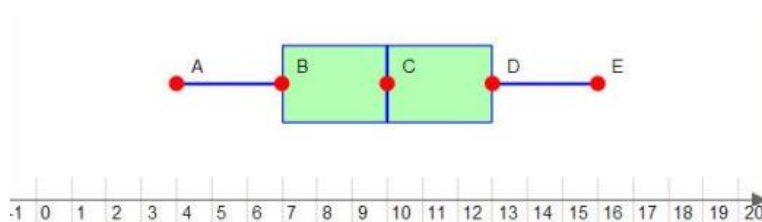   A. 6   B. 7   C. 2
     D. 9   E. Not given

124. What is the probability of landing on a **factor** of 4?
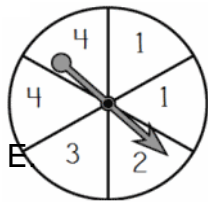
     A. 2/3   B. 1/2   C. 5/6
     D. 1/6   E. Not given

Use the following box plot to answer the problems 125-127.
http://blog.scootpad.com/2013/11/24/6thgrade-launch/

125. The letter **"C"** represents the:

     A. mode   B. mean   C. median   D. range   E. Not given

126. The inter-quartile range is found by finding the difference between values corresponding to points _____ of the box plot.

     A. E and D   B. D and B   C. E and A   D. C and A   E. Not given

127. Each section, A to B, B to C, C to D, and D to E, represents what part of the data?

     A. 20%   B. 25%   C. 50%   D. 100%   E. Not given

Use the tree diagram color combinations for Blue, White, and Red to find the probabilities in problems 128-130.

First   Second

B BB
W BW
B
R BR
B WB
W   W WW
R WR
B RB
R
W RW
R RR
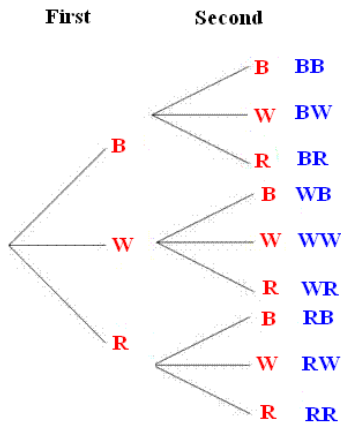
128. **How many different ways** can the colors be selected on two selections of the three colors?

A. 3   B. 6   C. 8   D. 9
E. Not given

129. What is the probability of getting **two of the same colors**?

A. 1/3   B. 1/6   C. 2/9   D. 1/9
E. Not given

130. What is the probability of getting **one blue and one red?**

A. 1/3   B. 1/6   C. 2/9   D. 1/9
E. Not given

131. Use the data from the pie graph **to determine the number of people in school who like alternative music if there are 300 people in the school.**

A. 30   B. 45   C. 35   D. 105

E. Not given

Classical 10%
Alternative 15%
Rock 35%
Country 25%
Jazz 15%
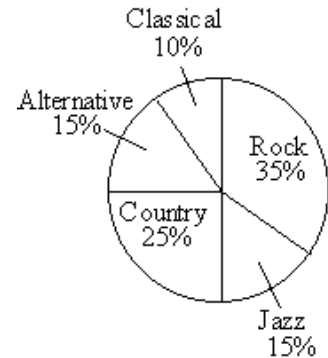
132. The circle graph below shows the degree of the central angle that shows how many students take the bus, walk, bike, or get transported to school by car. **Determine the percent of students that walk to school.**

Bus   Walk
144° 108°
72° 36°
Car   Bike
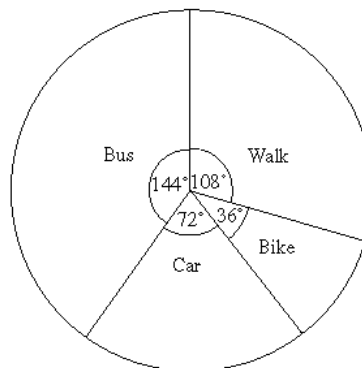
A. 20%   B. 60%   C. 11%   D. 30%   E. Not given

133. Use the bag of marbles to determine the **probability of selecting a multi-colored marble.**

   A. 0.3   B. 0.4   C. 0.5   D. 0.25   E. Not given

Use the deck of cards shown to answer problems 134-136.

A 2 3 4 5 6 7 8 9 10 J Q K

A 2 3 4 5 6 7 8 9 10 J Q K

A 2 3 4 5 6 7 8 9 10 J Q K

A 2 3 4 5 6 7 8 9 10 J Q K

www.analyzemath.com

134. What is the probability of getting a heart out of the deck of cards?

   A.   1/4   B. 1/5   C. 1/12
   D.   1/13   E. Not given

135. What is the probability of getting a Queen out of the deck of cards?

   A.   1/4   B. 1/5   C. 1/12
   D.   1/13   E. Not given

136. What is the probability of getting a 10 of diamonds or hearts, or any King?

   A.   8/52   B. 2/13   C. 3/26
   D.   1/13   E. Not given

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

	2	3	4	5	6	7
	3	4	5	6	7	8
	4	5	6	7	8	9
	5	6	7	8	9	10
	6	7	8	9	10	11
	7	8	9	10	11	12

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

   A.   1/7   B. 1/3   C. 1/5   D. 1/6
   F.   Not given

138. What is the probability of getting a number greater than or equal to 7?

   A.   7/12   B. 21/32   C. 1/2   D. 3/5
   E. Not given

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

   A. 1/12   B. 1/3   C. 1/2   D. 1/6   E. Not given

140. What is the probability of getting a 1?

   A. 1/36   B. 1/10   C. 1   D. 0   E. Not given

Shade the correct answer!
Example: A   ●   C   D   E

Name_____

School _____

101.	A	B	C	D	E	121.	A	B	C	D	E
102.	A	B	C	D	E	122.	A	B	C	D	E
103.	A	B	C	D	E	123.	A	B	C	D	E
104.	A	B	C	D	E	124.	A	B	C	D	E
105.	A	B	C	D	E	125.	A	B	C	D	E
106.	A	B	C	D	E	126.	A	B	C	D	E
107.	A	B	C	D	E	127.	A	B	C	D	E
108.	A	B	C	D	E	128.	A	B	C	D	E
109.	A	B	C	D	E	129.	A	B	C	D	E
110.	A	B	C	D	E	130.	A	B	C	D	E
111.	A	B	C	D	E	131.	A	B	C	D	E
112.	A	B	C	D	E	132.	A	B	C	D	E
113.	A	B	C	D	E	133.	A	B	C	D	E
114.	A	B	C	D	E	134.	A	B	C	D	E
115.	A	B	C	D	E	135.	A	B	C	D	E
116.	A	B	C	D	E	136.	A	B	C	D	E
117.	A	B	C	D	E	137.	A	B	C	D	E
118.	A	B	C	D	E	138.	A	B	C	D	E
119.	A	B	C	D	E	139.	A	B	C	D	E
120.	A	B	C	D	E	140.	A	B	C	D	E

Shade the correct answer!
Example: A   ●   C   D   E

Name_____

School _____

ANSWER KEY – OK 3/25/15 cvb

101.	A	**●**	C	D	E	121.	A	B	**●** D E
102.	A	B	**●**	D	E	122.	A	B	C **●** E
103.	**●**	B	C	D	E	123.	A	B	**●** D E
104.	A	B	C	**●**	E	124.	A	B	**●** D E
105.	A	B	**●**	D	E	125.	A	B	**●** D E
106.	A	B	C	**●**	E	126.	A	**●**	C D E
107.	A	**●**	C	D	E	127.	A	**●**	C D E
108.	A	B	C	**●**	E	128.	A	B	C **●** E
109.	A	B	C	**●**	E	129.	**●**	B	C D E
110.	**●**	B	C	D	E	130.	A	B	**●** D E
111.	A	**●**	C	D	E	131.	A	**●**	C D E
112.	A	**●**	C	D	E	132.	A	B	C **●** E
113.	A	B	C	D	**●**	133.	A	**●**	C D E
114.	A	B	C	**●**	E	134.	**●**	B	C D E
115.	A	B	**●**	D	E	135.	A	B	C **●** E
116.	**●**	B	C	D	E	136.	A	B	**●** D E
117.	A	**●**	C	D	E	137.	A	B	C **●** E
118.	A	B	**●**	D	E	138.	**●**	B	C D E
119.	A	B	**●**	D	E	139.	A	**●**	C D E
120.	**●**	B	C	D	E	140.	A	B	C **●** E