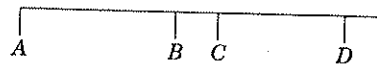## TEST FOUR   MATHEMATICS ACHIEVEMENT
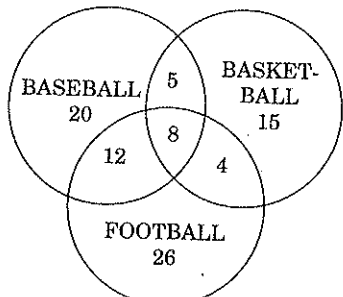
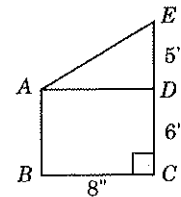*Time limit: 40 minutes*   *Number of questions: 50*

> DIRECTIONS: Each question is followed by four answer choices. Choose the correct answer to each question, and fill in the corresponding circle on the Answer Sheet.

121. $(7 \times 10^3) + (4 \times 10^2) + 5 =$
(A) 7450 (B) 7405 (C) 745 (D) 7540

122. What is the area of a triangle whose base measures 8 inches and whose altitude measures 9 inches?
(A) 72 square inches
(B) 32 square inches
(C) 18 square inches
(D) 36 square inches

123. A plane travels 1260 miles in $3\frac{1}{2}$ hours. What is the average rate of speed of the plane?
(A) 350 miles per hour
(B) 300 miles per hour
(C) 320 miles per hour
(D) 360 miles per hour

124. Which of the following is a root of the equation $6 + x^2 = 70$?
(A) 8 (B) 7 (C) 6 (D) 5

125. Mr. Burns made a down payment of $57 on the purchase of a new TV set. If this was 15% of the full price of the set, how much more remained for Mr. Burns to pay?
(A) $323 (B) $380 (C) $350 (D) $313

126. The scale on a map is $\frac{1}{2}'' = 80$ miles. If the distance between two cities measures $3\frac{1}{4}''$ on the map, how far apart are the two cities?
(A) 500 miles (B) 520 miles
   (C) 585 miles (D) 560 miles

127. At a theater the cost of seats in the orchestra was twice the cost of seats in the balcony. At one performance $7000 was taken in on ticket sales of 880. If 520 orchestra seats were sold at $10 each, how many balcony seats were sold?
(A) 360 (B) 320 (C) 440 (D) 560

128. A rectangle and a square have equal areas. If the length of the rectangle measures 20 feet and its width measures 5 feet, then the measure of a side of the square is
(A) 20 feet (B) 15 feet (C) 10 feet
   (D) 12 feet

129. A saleswoman is paid $40 per week plus 8% of the sales that exceed $2000 per week. What is the saleswoman's pay for a week when her sales amounted to $7850?
(A) $485 (B) $508 (C) $468 (D) $540

130. The freshman class at Lincoln High School numbers 320 students. There are 18 more boys than girls in the class. Which of the following equations may be solved to find the number of girls in the class?
(A) $x + 18 = 320$
(B) $x + x + 18 = 320$
(C) $x + y = 320$
(D) $x + 320 = x + 18$

131. A man has 8 white shirts and 3 blue shirts in his wardrobe. If he selects a shirt at random, what is the probability that his choice is a white shirt?
(A) $\frac{3}{8}$ (B) $\frac{3}{11}$ (C) $\frac{3}{5}$ (D) $\frac{8}{11}$

132. If $3x + y = 14$ and $3x - y = 10$, then $y =$
(A) 4 (B) 2 (C) 3 (D) 1

133. The length of a rectangle is 8 inches, and its diagonal measures 10 inches. The area of the rectangle is
(A) 48 square inches
(B) 60 square inches
(C) 80 square inches
(D) 24 square inches

134. It takes a work crew 12 hours to complete $\frac{3}{4}$ of a job. How many more hours will the crew need to finish the job?
(A) 8 (B) 10 (C) 6 (D) 4

135. The area of a semicircle is 39.25 square inches. Find the radius of the semicircle. (Let $\pi = 3.14$.)
    (A) 5 inches (B) 6 inches (C) 10 inches
      (D) 8 inches

136. Two cars start from the same point and travel in opposite directions at rates differing by 10 miles per hour. If the cars are 240 miles apart after 3 hours, how fast is the slower car traveling?
    (A) 45 miles per hour
    (B) 40 miles per hour
    (C) 35 miles per hour
    (D) 43 miles per hour

137. A piece of beef weighs 3 pounds 6 ounces. At $3.12 per pound, what is the cost of this piece of beef?
    (A) $10.40 (B) $9.78 (C) $10.53
      (D) $10.43

138. A tank holds 50 gallons of a mixture of acid and water that is 30% acid. If 20 gallons of acid are added to the mixture, what is the percent of acid in the new mixture?
    (A) 35% (B) 30% (C) 50% (D) 40%

139. Eight men earn $2880 for 6 days of work. At the same rate how much will 12 men earn for 5 days of work?
    (A) $3600 (B) $3200 (C) $4800
      (D) $4320

140. A garden plot is 180 feet long and 60 feet wide. A gardener wishes to divide this plot into squares that measure 20 feet on a side. How many squares will he obtain?
    (A) 18 (B) 20 (C) 27 (D) 25

141. If on the number line below $AC = 30$, $BD = 40$, and $BC = 12$, then $AD =$

    A   B   C   D

    (A) 70 (B) 58 (C) 48 (D) 52

142. If $xy + 12 = 40$ and $y = 4$, the value of $x + y =$
    (A) 12 (B) 15 (C) 14 (D) 11

143. If n is an even number, which of the following is an odd number?
    (A) $2n$ (B) $3n$ (C) $2n + 1$ (D) $n + 4$

144. Mr. Harris left home at 8:40 A.M. to take a trip to a distant city. His driving time was 5 hours and 30 minutes. In addition, he stopped for 15 minutes to buy gas and 50 minutes for lunch. At what time did Mr. Harris reach his destination?
    (A) 2:30 P.M. (B) 2:45 P.M. (C) 3:10 P.M.
      (D) 3:15 P.M.

145. If $a = \frac{1}{3}$ and $b = \frac{1}{2}$, what is the value of $a^2 + ab + b^2$?
    (A) $\frac{7}{18}$ (B) $\frac{19}{36}$ (C) $1\frac{4}{9}$ (D) $\frac{17}{36}$

146. The diagram below shows the number of students enrolled in three major sports at Martin Luther King High School. How many students play both football and baseball?

    (A) 20 (B) 28 (C) 46 (D) 26

147. How long does it take to cover a mile at a speed of 50 miles per hour?
    (A) $1\frac{1}{3}$ minutes (B) $1\frac{1}{2}$ minutes
      (C) $1\frac{1}{10}$ minutes (D) $1\frac{1}{5}$ minutes

148. If a motorist pays $10.48 for 8 gallons of gas how much would he pay for 12 gallons of gas at the same rate?
    (A) $13.10 (B) $15.72 (C) $14.96
      (D) $ 15.24

149. If $x + 5 = y + 3$, then which of the following is true?
    (A) $x = y$ (B) $x > y$ (C) $y > x$
      (D) $x - y = 2$

150. If $0.47 \times 69.8 = 47 \times \square$, then $\square =$
    (A) 0.698 (B) 6.98 (C) 698 (D) 6,980

151. A team has won 30 games and lost 10 games. If the team wins one-half of the next 10 games it plays, what percent of games played will it have won?
(A) 70% (B) 50% (C) 75% (D) 80%

152. A garden plot in the form of a rectangle has a length of $4x + 5$ feet and width of $x + 10$ feet. What is the perimeter of the plot?
(A) $(4x + 5)(x + 10)$ feet
(B) $5x + 15$ feet
(C) $10x + 30$ feet
(D) $5x + 10$ feet

153. If $s = 16t^2$, what is the value of s when $t = \frac{1}{4}$?
(A) 32 (B) 1 (C) 256 (D) 4

154. The freshman class at Jefferson High School numbers 120 students. If this is 30% of the total enrollment, how many students attend Jefferson High School?
(A) 40 (B) 400 (C) 4,000 (D) 3,600

155. Which of the following is a true sentence?
(A) $-6 > -2$
(B) $5 > -3 > 2$
(C) $4 > 2 > -1$
(D) $0 > -5 > -3$

156. If the circumference of a circle is 12π, what is the area of the circle?
(A) 36π (B) 18π (C) 144π (D) 72π

157. John and Bill earn a total of $170 per day for an 8-hour work day. John earns $3 per hour more than Bill. Which of the following equations can be used to find Bill's hourly pay?
(A) $8x + 8x + 3 = 170$
(B) $8x + x + 24 = 170$
(C) $8x + 8(x + 3) = 170$
(D) $x + 8(x + 3) = 170$

158.   3 yards 2 feet 5 inches
   $-$ 1 yard 1 foot 7 inches =

(A) 2 yards 1 foot 8 inches
(B) 1 yard 1 foot 10 inches
(C) 2 yards 10 inches
(D) 2 yards 8 inches

159. A house is assessed for $80,000 and is insured for 75% of its assessed valuation. What is the yearly premium if it is based on $0.55 per hundred dollars of assessed valuation?
(A) $330 (B) $3300 (C) $303 (D) $350

160. $\frac{1}{2}\left(\frac{1}{3} + \frac{1}{4}\right) =$
(A) $\frac{1}{14}$ (B) $\frac{7}{24}$ (C) $\frac{1}{7}$ (D) $\frac{1}{24}$

161. If $2x + 3 = 11$, then $10 - x =$
(A) 5 (B) 3 (C) 0 (D) 6

162. Mr. Evans plans to take a trip of 210 miles, driving at an average speed of 42 miles per hour. How many hours does the trip take?
(A) $5\frac{1}{2}$ (B) 4 (C) 5 (D) $4\frac{1}{2}$

163. Ms. Hernandez rents a car while on a business trip. She pays $37 per day and $0.18 per mile for every mile above 100. If she drives 142 miles, what is her rental fee for 1 day?
(A) $62.56 (B) $44.56 (C) $55.00
(D) $46.50

164. If $BC = 8''$, $CD = 6''$, and $DE = 5''$, find the area of the figure below

(A) 60 square inches
(B) 68 square inches
(C) 65 square inches
(D) 64 square inches

165. At a sale of microwave ovens, $\frac{5}{8}$ of the ovens were sold the first day and $\frac{2}{3}$ of the remainder were sold the second day. If 15 ovens were left after the second day, how many ovens were put on sale the first day?
(A) 100 (B) 120 (C) 112 (D) 150

166. If $3x - 2 = 16$, then 5 more than twice $x =$
(A) 12 (B) 17 (C) 15 (D) 19

167. If the sum of two numbers is y and one of the numbers is 5, then three times the other number is
(A) $3(5 - y)$ (B) $3 \times 5 - y$
(C) $3(y - 5)$ (D) $3xy - 5$

168. 30% of what number is 12?
(A) 4 (B) 4.8 (C) 48 (D) 40

169. A recipe calls for 4 ounces of butter and $1\frac{1}{2}$ ounces of sugar. If 6 ounces of butter are used, how many ounces of sugar should be used?
(A) $2\frac{1}{4}$ (B) $2\frac{1}{2}$ (C) 2 (D) $2\frac{3}{4}$

170. If $\frac{1}{4}x = 20$, then $\frac{3}{8}x =$
(A) 20 (B) 30 (C) 60 (D) 50