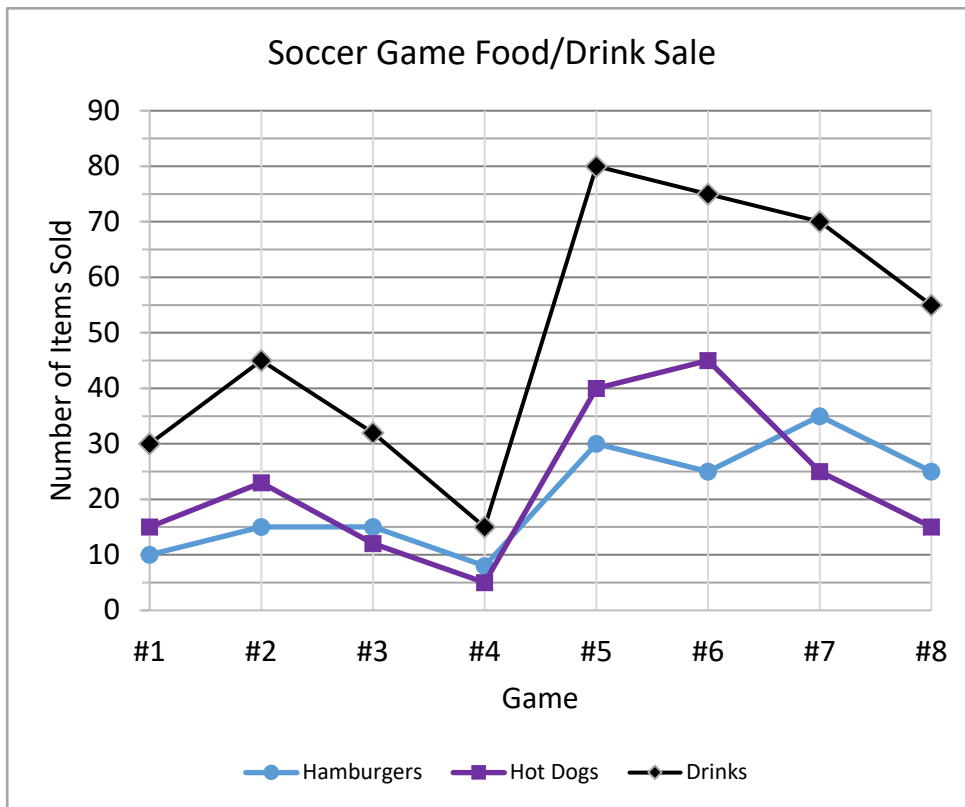# Team Problem Solving Challenge

April 5, 2019

DO NOT BEGIN UNTIL YOU ARE INSTRUCTED TO DO SO.

All teams will participate in this Team Problem Solving Challenge. Each team will be given a set of 10 problems to solve within 45 minutes. Team members may work together in any way to solve the problems. Team members may discuss during this section of the competition. The use of calculators is allowed, and calculations may also be done on scratch paper. All answers must be complete and legible. If the answer is expressed in common fraction, reduce the fraction to lowest terms. When all ten problems are complete, the team captain will raise a hand for a runner to get the answer sheet. The runner will bring the answer sheet to one of the judges. The judges will check the answers. If incorrect, the answer sheet will be returned to the team. Each team has at most 3 checks from the judges within the 45-minute limit. At the end of the challenge, all answer sheets will be collected. Each correct answer is worth 2 points, and the team challenge score will go toward to the team overall score, which also includes individual score.

1. Devin purchased a boat for a total cost of $22,400. He made a $4,400 down payment and agreed to pay the remainder in 36 equal payments. How much is each payment?

1. $_____

2. Jackson's mom just had a baby. He notices that they use an average of eleven diapers per day. At this rate, how many total diapers will they use during June and July of this year?

2. _____

3. In a triangle, the second angle is twice as large as the first and the third angle is three times as large as the second. What is the measure, in degrees, of the third angle?

3. _____degrees

4. Middle school students sold hamburgers, hot dogs, and drinks during the soccer season. Using the table and graph shown below, how much money did they earn during game #5?

4. $_____

Food/Drink	Cost
Hamburger	$3.50
Hot Dogs	$2.00
Drinks	$1.75

Soccer Game Food/Drink Sale

5.   How many three-digit numbers can be found when the sum of the three digits is 5?

5.   _____

6.   The point with the coordinates (-7, 3) is the midpoint of the line segment with one endpoint at (8, 2). Find the sum of x and y coordinates of the other endpoint.

6.   _____

7.   Clint has 3 red pens, 3 blue pens, 4 black pens, and 5 green pens in his school bag. If he randomly selects two pens from his bag, what is the probability that both pens are blue? Write your answer as a common fraction.
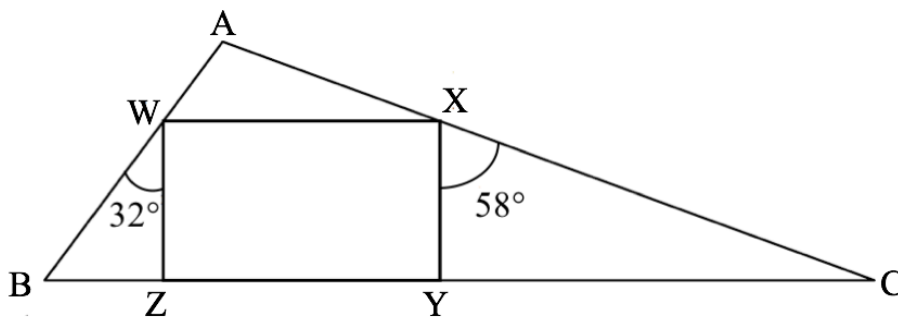
7.   _____

8. Evaluate: $\dfrac{\dfrac{1}{3}+\dfrac{1}{4}}{\dfrac{1}{2}+\dfrac{1}{3}}$ 8. _____

Write your answer as a common fraction.

9. Rectangle *WXYZ* is drawn on Triangle *ABC*, such that point *W*   9. _____degrees
lies on segment *AB*, point *X* lies on segment *AC*, and points *Y*
and *Z* lies on segment *BC*, as shown. If $m\angle BWZ = 32°$ and
$m\angle CXY = 58°$, what is $m\angle BAC$, in degrees?

10. Orange Cab charges 25 cents per ¼ mile traveled. Brown Cab charges 35 cents per minute traveled. Valeria takes a ten-mile cab ride at an average speed of 30 miles per hour. In dollars, how much more would Orange Cab charge than Brown Cab for this ride?

10. $_____