

Team Round

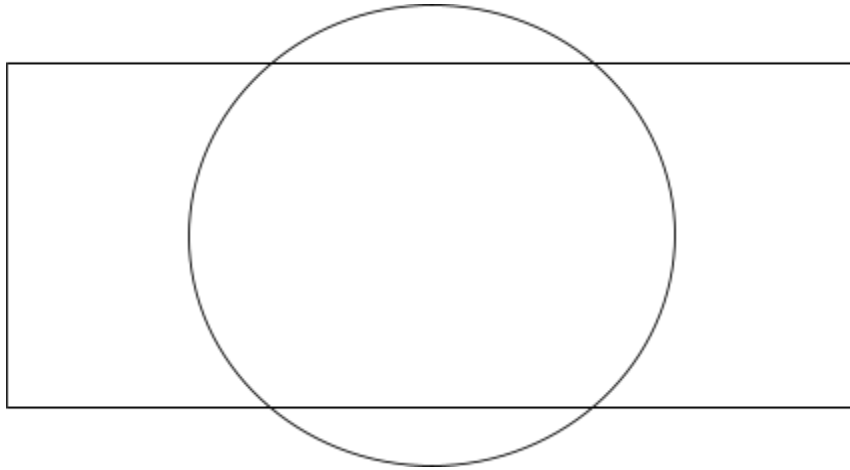
30 minutes

Please put all answers on the provided answer sheet, units are not required.

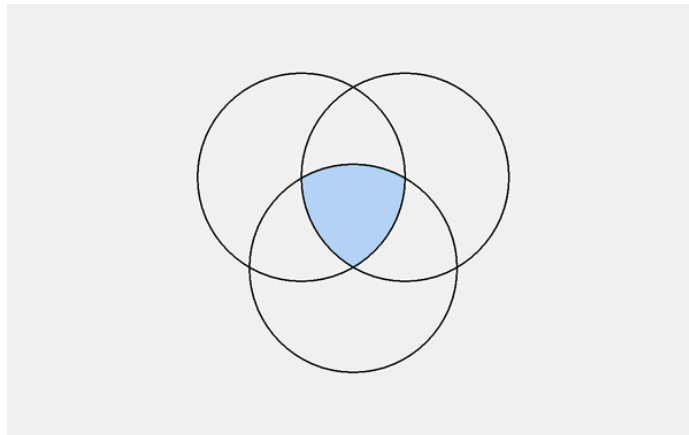
1. Peter Pan is x years old, and is $\frac{1}{5}$ Captain Hook's age. In three years, he will be $\frac{2}{11}$ Captain Hook's age. Remember, Peter Pan never ages! How old is Peter Pan?
2. Bo Peep has a bag of buttons. Her bag contains 17 white buttons, 12 periwinkle buttons, 3 pink buttons, and 8 yellow buttons. She takes out 25 buttons from the bag to sew onto her new dress. How many of the removed buttons are yellow if the probability of picking a yellow button from the bag now is $\frac{1}{3}$?
3. The White Rabbit is perpetually tardy and therefore carries a pocket watch. Watches (and clocks in general) count time in base 6. What is 413 (in base 6) converted to base 10?
4. Woody and Buzz Lightyear have 2 bags of marbles. Bag A has 5 red and 2 yellow marbles. Bag B has 3 red and 5 yellow marbles. A bag and marble are chosen at random. If the chosen marble is red, what is the probability that the chosen bag was Bag A?
5. Felix the ant is walking to his house that is 14 steps away. Felix walks 1 step back, 2 steps forward, 3 steps back, 4 steps forward, and so on before he reaches his house. What is the total number of steps he will need to take just to get to his house?
6. A gold coin has two sides: the crown side and the plain side. There is an equal probability of landing on the crown and the plain side. Vanellope flips a gold coin 3 times. Ralph flips a gold coin 2 times. What is the probability that Vanellope flips the crown side more times than Ralph?
7. Russell carries a backpack that contains five pieces of paper, each labeled with one of the digits "1, 2, 3", "4" or "5", with no repeats. He randomly draws 3 numbers out of his backpack, without replacement, to construct a three-digit number. What is the probability that the three-digit number is a multiple of 3? (answer as a fraction)

(Flip to Back)

8. Remy, the rat, has a rectangular area of cookie dough with sides 8 and $2\sqrt{2}$. He then takes a circular cookie cutter with a radius of 2 and overlaps the center of the cutter with the center of the rectangle. After he finishes cutting, what is the area of the cookie Remy has cut?



9. Cinderella is at a ball. During the ball, three spotlights project circles with radii of 6 overlapping over her. The spotlights overlap in such a way that each circle crosses the center of the other 2 circles. What is the area of the section that all three circles share?



10. The heart of Te Fiti displayed a random number between 1-10. A fair dice with numbers 1-6 is rolled. What is the probability that the product of the number on the heart of Te Fiti and the die will be a perfect square?