

HW52: Probability

Write your answers on a separate sheet of paper. Remember that you do not need to write the entire word problem.

Find the number of possible outcomes in the sample space.

- 1) An ice cream stand offers three flavors: strawberry, chocolate, and vanilla.
- 2) A coffee shop offers French roast and Italian roast coffee.
- 3) When a button is pressed, a computer program outputs a random odd number greater than 1 and less than 13. You press the button once.
- 4) When a button is pressed, a computer program outputs a random odd number greater than 1 and less than 9. You press the button twice.
- 5) A hot dog stand offers both small and large hot dogs. Each hot dog can be ordered plain or with mustard.
- 6) A basket contains one apple, one peach, and one orange. You randomly pick a piece of fruit to eat. Then you pick another piece to eat later.
- 7) A jewelry store sells gold and platinum rings. Each ring is fitted with a ruby, sapphire, or emerald gemstone.
- 8) The chess club must decide when to meet for a practice. The possible days are Tuesday or Wednesday. The possible times are 3, 4, or 5 p.m.
- 9) When a button is pressed, a computer program outputs a random odd number greater than 1 and less than 9. You press the button four times.
- 10) A math quiz has seven multiple choice questions. Each question has four options: A, B, C, and D.
- 11) When a button is pressed, a computer program outputs a random odd number greater than 1 and less than 11. You press the button four times.
- 12) A math quiz has five true/false questions.

Find the probability.

- 13) You roll a standard six-sided die. You roll a multiple of 3.
- 14) You roll a standard six-sided die. You roll a 4.
- 15) You roll a standard six-sided die. You do not roll a 1.
- 16) You roll a standard six-sided die. You roll a number larger than 10.
- 17) You roll a standard six-sided die. You roll an odd number.
- 18) You flip a fair coin. It lands on heads.
- 19) You flip a fair coin. It lands on heads or tails.
- 20) You shuffle a standard 52 card deck without Jokers. You draw an 8.
- 21) You shuffle a standard 52 card deck without Jokers. You draw a heart.
- 22) You shuffle a standard 52 card deck without Jokers. You draw a black 10.
- 23) You shuffle a standard 52 card deck without Jokers. You draw a Jack.
- 24) You shuffle a standard 52 card deck without Jokers. You draw a face card (King, Queen, Jack).

Determine whether the scenario involves independent or dependent events.

- 25) There are seven nickels and six dimes in your pocket. You randomly pick a coin out of your pocket and then return it to your pocket. Then you randomly pick another coin. Both times the coin is a nickel.
- 26) There are eight nickels and eight dimes in your pocket. You randomly pick a coin out of your pocket and then return it to your pocket. Then you randomly pick another coin. The first coin is a nickel and the second coin is a dime.
- 27) Your sock drawer has six white socks, six brown socks, and four black socks. You randomly pick a sock and put it on your left foot and then pick another sock and put it on your right foot. You leave the house with a white sock on your left foot and a brown sock on your right foot.
- 28) A bag contains eight red marbles and eight blue marbles. You randomly pick a marble and then return it to the bag before picking another marble. Both the first and second marbles are red.
- 29) A bag contains eight red marbles and six blue marbles. You randomly pick a marble and then return it to the bag before picking another marble. The first marble is red and the second marble is blue.
- 30) A box of chocolates contains eight milk chocolates and five dark chocolates. You randomly pick a chocolate and eat it. Then you randomly pick another piece. The first piece is milk chocolate and the second piece is dark chocolate.

Find the probability. Ignore the answer key for question 34; answer it with the word yeet.

- 31) You flip a coin twice. The first flip lands tails-up and the second flip also lands tails-up.
- 32) A basket contains six apples and five peaches. You randomly select a piece of fruit and then return it to the basket. Then you randomly select another piece of fruit. The first piece of fruit is an apple and the second piece is a peach.
- 33) A basket contains five apples and eight peaches. You randomly select a piece of fruit and then return it to the basket. Then you randomly select another piece of fruit. Both pieces of fruit are apples.
- 34) There are four nickels and four dimes in your pocket. You randomly pick a coin out of your pocket and then return it to your pocket. Then you randomly pick another coin. The first coin is a nickel and the second coin is a dime.
- 35) You select a card from a standard shuffled deck of 52 cards. You return the card, shuffle, and then select another card. Both times the card is a diamond. (Note that 13 of the 52 cards are diamonds.)
- 36) A cooler contains nine bottles of sports drink: three lemon-lime flavored, three orange flavored, and three fruit-punch flavored. You randomly grab a bottle. Then you return the bottle to the cooler, mix up the bottles, and randomly select another bottle. The first time, you get a lemon-lime drink. The second time, you get a fruit-punch.

Determine if events A and B are independent.

37) $P(A) = \frac{9}{20}$ $P(B) = \frac{1}{2}$ $P(A \text{ and } B) = \frac{9}{40}$

39) $P(A) = \frac{7}{20}$ $P(B) = \frac{1}{4}$ $P(A \text{ and } B) = \frac{21}{400}$

41) $P(A) = \frac{11}{20}$ $P(B) = \frac{1}{2}$ $P(A \text{ and } B) = \frac{11}{40}$

38) $P(A) = \frac{3}{10}$ $P(B) = \frac{3}{10}$ $P(A \text{ and } B) = \frac{3}{40}$

40) $P(A) = \frac{1}{4}$ $P(B) = \frac{3}{4}$ $P(A \text{ and } B) = \frac{3}{20}$

42) $P(A) = \frac{13}{20}$ $P(B) = \frac{1}{5}$ $P(A \text{ and } B) = \frac{13}{200}$