

Level 1

- a. A six-sided die has the numbers one to six on its sides. What is the probability of rolling a five?

(A) $\frac{2}{6}$ (B) $\frac{1}{6}$ (C) $\frac{5}{6}$ (D) $\frac{3}{6}$ (E) $\frac{4}{6}$

- b. The spinner shown is divided into 6 sections of equal size. What is the probability of landing on a section that contains the letter P using this spinner?

(A) $\frac{3}{6}$ (B) $\frac{4}{6}$ (C) $\frac{5}{6}$
(D) $\frac{2}{6}$ (E) $\frac{1}{6}$



- c. You are writing a multiple choice test and on one question you guess and pick an answer at random. If there are five possible choices (A,B,C,D,E), what is the probability that you guessed correctly?

(A) $\frac{1}{5}$ (B) $\frac{5}{5}$ (C) $\frac{4}{5}$ (D) $\frac{2}{5}$ (E) $\frac{3}{5}$

- d. At a class party, each student randomly selects a wrapped prize from a bag. The prizes include books and calculators. There are 27 prizes in the bag. Meghan is the first to choose a prize. If the probability of Meghan choosing a book for her prize is $\frac{2}{3}$, how many books are in the bag?

(A) 15 (B) 9 (C) 21 (D) 7 (E) 18

- e. An envelope contains 2 sunflower seeds, 3 green bean seeds, and 4 pumpkin seeds. Carrie randomly chooses one of the seeds from the envelope. What is the probability that Carrie chooses a sunflower seed?

(A) $\frac{2}{9}$ (B) $\frac{5}{9}$ (C) $\frac{9}{7}$ (D) $\frac{7}{9}$ (E) $\frac{1}{9}$

- f. A box of fruit contains 20 apples, 10 oranges, and no other fruit. When a fruit is randomly chosen from the box, what is the probability that the fruit is an orange?

(A) $\frac{1}{10}$ (B) $\frac{1}{20}$ (C) $\frac{1}{30}$ (D) $\frac{1}{3}$ (E) $\frac{2}{3}$

- g. A box contains 1 grey ball, 2 white balls and 3 black balls. Without looking, John reaches in and chooses one ball at random. What is the probability that the ball is *not* grey?

(A) 1 (B) $\frac{2}{6}$ (C) $\frac{3}{6}$ (D) $\frac{4}{6}$ (E) $\frac{5}{6}$

- h. There are 2 red, 5 yellow and 4 blue balls in a bag. If a ball is chosen at random from the bag, without looking, the probability of choosing a yellow ball is

(A) $\frac{2}{11}$ (B) $\frac{5}{11}$ (C) $\frac{4}{11}$ (D) $\frac{6}{11}$ (E) $\frac{7}{11}$

Level 2

- a. A fair die is constructed by labelling the faces of a wooden cube with the numbers 1, 1, 1, 2, 3, and 3. If this die is rolled once, the probability of rolling an odd number is

(A) $\frac{5}{6}$ (B) $\frac{4}{6}$ (C) $\frac{3}{6}$ (D) $\frac{2}{6}$ (E) $\frac{1}{6}$

- b. The Grade 7 class at Gauss Public School has sold 120 tickets for a lottery. One winning ticket will be drawn. If the probability of one of Mary's tickets being drawn is $\frac{1}{15}$, how many tickets did she buy?

(A) 5 (B) 6 (C) 7 (D) 8 (E) 9

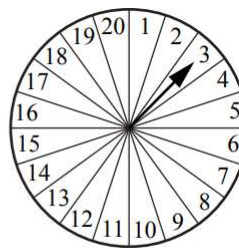
- c. A bottle of children's vitamins contains tablets in three different shapes. Among the vitamins, there are 60 squares, 60 triangles and 60 stars. Each shape comes in an equal number of three different flavours – strawberry, grape and orange. A tablet is randomly chosen from a newly opened bottle. What is the probability that this tablet is a grape star?

(A) $\frac{1}{9}$ (B) $\frac{1}{60}$ (C) $\frac{1}{20}$ (D) $\frac{1}{3}$ (E) $\frac{1}{180}$

- d. A box contains 36 pink, 18 blue, 9 green, 6 red, and 3 purple cubes that are identical in size. If a cube is selected at random, what is the probability that it is green?

(A) $\frac{1}{9}$ (B) $\frac{1}{8}$ (C) $\frac{1}{5}$ (D) $\frac{1}{4}$ (E) $\frac{9}{70}$

- e. A circular spinner is divided into 20 equal sections, as shown. An arrow is attached to the centre of the spinner. The arrow is spun once. What is the probability that the arrow stops in a section containing a number that is a divisor of 20?



(A) $\frac{12}{20}$ (B) $\frac{14}{20}$ (C) $\frac{15}{20}$
(D) $\frac{7}{20}$ (E) $\frac{6}{20}$

- f. In Braydon's cafeteria, the meats available are beef and chicken. The fruits available are apple, pear and banana. Braydon is randomly given a lunch with one meat and one fruit. What is the probability that the lunch will include a banana?

(A) $\frac{1}{3}$ (B) $\frac{2}{3}$ (C) $\frac{1}{2}$ (D) $\frac{1}{5}$ (E) $\frac{3}{5}$

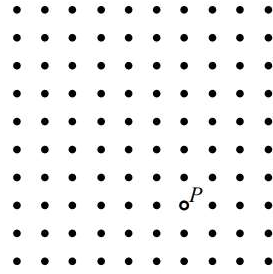
- g. A special six-sided die is rolled. The probability of rolling a number that is a multiple of three is $\frac{1}{2}$. The probability of rolling an even number is $\frac{1}{3}$. A possibility for the numbers on the die is

(A) 1, 2, 3, 5, 5, 6 (B) 1, 2, 3, 3, 5, 6 (C) 1, 2, 3, 4, 6, 6
(D) 1, 2, 3, 3, 4, 6 (E) 2, 3, 3, 3, 5, 6

- h.** A jar contains quarters (worth \$0.25 each), nickels (worth \$0.05 each) and pennies (worth \$0.01 each). The value of the quarters is \$10.00. The value of the nickels is \$10.00. The value of the pennies is \$10.00. If Judith randomly chooses one coin from the jar, what is the probability that it is a quarter?
- (A) $\frac{25}{31}$ (B) $\frac{1}{31}$ (C) $\frac{1}{3}$ (D) $\frac{5}{248}$ (E) $\frac{1}{30}$

Level 3

- a.** A 10 by 10 grid is created using 100 points, as shown. Point P is given. One of the other 99 points is randomly chosen to be Q . What is the probability that the line segment PQ is vertical or horizontal?
- (A) $\frac{2}{11}$ (B) $\frac{1}{5}$ (C) $\frac{1}{10}$
 (D) $\frac{4}{25}$ (E) $\frac{5}{33}$



- b.** In the *Coin Game*, you toss three coins at the same time. You win only if the 3 coins are all showing heads, or if the 3 coins are all showing tails. If you play the game once only, what is the probability of winning?
- (A) $\frac{1}{6}$ (B) $\frac{1}{4}$ (C) $\frac{2}{27}$ (D) $\frac{2}{3}$ (E) $\frac{1}{3}$

- c.** Angie has a jar that contains 2 red marbles, 2 blue marbles, and no other marbles. She randomly draws 2 marbles from the jar. If the marbles are the same colour, she discards one and puts the other back into the jar. If the marbles are different colours, she discards the red marble and puts the blue marble back into the jar. She repeats this process a total of three times. What is the probability that the remaining marble is red?
- (A) $\frac{1}{2}$ (B) $\frac{1}{4}$ (C) $\frac{2}{3}$ (D) $\frac{1}{3}$ (E) 0

- d.** Two standard six-sided dice are tossed. One die is red and the other die is blue. What is the probability that the number appearing on the red die is greater than the number appearing on the blue die?
- (A) $\frac{18}{36}$ (B) $\frac{25}{36}$ (C) $\frac{15}{36}$ (D) $\frac{12}{36}$ (E) $\frac{17}{36}$

- e.** Mark has a bag that contains 3 black marbles, 6 gold marbles, 2 purple marbles, and 6 red marbles. Mark adds a number of white marbles to the bag and tells Susan that if she now draws a marble at random from the bag, the probability of it being black or gold is $\frac{3}{7}$. The number of white marbles that Mark adds to the bag is
- (A) 5 (B) 2 (C) 6 (D) 4 (E) 3