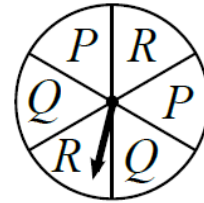


All these problems appeared on a Gauss contest, for grade 7 students created by the Centre for Education in Mathematics and Computing at the University of Waterloo. For more contests and other resources visit their website: <http://cemc.uwaterloo.ca>

2014

4. 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)  $\frac{1}{6}$

6. Which of these fractions is equivalent to  $\frac{15}{25}$ ?

- (A)  $\frac{3}{4}$       (B)  $\frac{2}{3}$       (C)  $\frac{3}{5}$       (D)  $\frac{1}{2}$       (E)  $\frac{5}{7}$

21. A bicycle at Store P costs \$200. The regular price of the same bicycle at Store Q is 15% more than it is at Store P. The bicycle is on sale at Store Q for 10% off of the regular price. What is the sale price of the bicycle at Store Q?

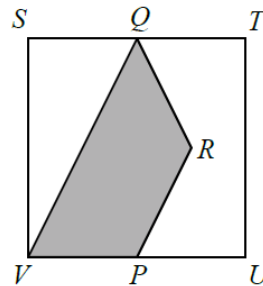
- (A) \$230.00    (B) \$201.50    (C) \$199.00    (D) \$207.00    (E) \$210.00

23. 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)  $\frac{17}{36}$

24. In the diagram shown,

- $STUV$  is a square,
- $Q$  and  $P$  are the midpoints of  $ST$  and  $UV$ ,
- $PR = QR$ , and
- $VQ$  is parallel to  $PR$ .



What is the ratio of the shaded area to the unshaded area?

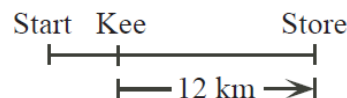
- (A) 2 : 3      (B) 3 : 5      (C) 1 : 1  
 (D) 7 : 9      (E) 5 : 7

2013

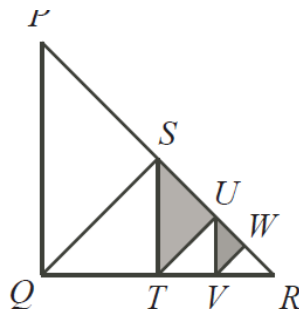
7. The smallest number in the set  $\left\{\frac{1}{2}, \frac{2}{3}, \frac{1}{4}, \frac{5}{6}, \frac{7}{12}\right\}$  is

- (A)  $\frac{1}{2}$       (B)  $\frac{2}{3}$       (C)  $\frac{1}{4}$       (D)  $\frac{5}{6}$       (E)  $\frac{7}{12}$

8. Ahmed is going to the store. One quarter of the way to the store, he stops to talk with Kee. He then continues for 12 km and reaches the store. How many kilometres does he travel altogether?



- (A) 15            (B) 16            (C) 24  
(D) 48            (E) 20
15. Daniel begins with 64 coins in his coin jar. Each time he reaches into the jar, he removes half of the coins that are in the jar. How many times must he reach in and remove coins from his jar so that exactly 1 coin remains in the jar?
- (A) 5            (B) 32            (C) 6            (D) 7            (E) 63
19. 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
23. In the right-angled triangle  $PQR$ ,  $PQ = QR$ . The segments  $QS$ ,  $TU$  and  $VW$  are perpendicular to  $PR$ , and the segments  $ST$  and  $UV$  are perpendicular to  $QR$ , as shown. What fraction of  $\triangle PQR$  is shaded?

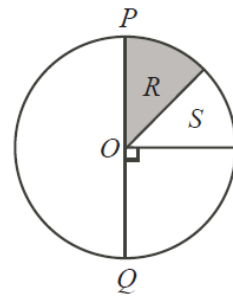


- (A)  $\frac{3}{16}$             (B)  $\frac{3}{8}$             (C)  $\frac{5}{16}$   
(D)  $\frac{5}{32}$             (E)  $\frac{7}{32}$

2012

3. 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)  $\frac{4}{6}$
4. The largest fraction in the set  $\left\{\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{5}, \frac{1}{10}\right\}$  is
- (A)  $\frac{1}{2}$             (B)  $\frac{1}{3}$             (C)  $\frac{1}{4}$             (D)  $\frac{1}{5}$             (E)  $\frac{1}{10}$
8. Bailey scores on six of her eight shots. The percentage of shots that she *does not* score on is
- (A) 2            (B) 40            (C) 10            (D) 20            (E) 25
12. Which of the following is *not* equal to  $\frac{15}{4}$ ?
- (A) 3.75            (B)  $\frac{14+1}{3+1}$             (C)  $\frac{3}{4} + 3$             (D)  $\frac{5}{4} \times \frac{3}{4}$             (E)  $\frac{21}{4} - \frac{5}{4} - \frac{1}{4}$

13. On the spinner shown,  $PQ$  passes through centre  $O$ . If areas labelled  $R$  and  $S$  are equal, then what percentage of the time will a spin stop on the shaded region?



- (A) 50%      (B) 22.5%      (C) 25%  
 (D) 45%      (E) 12.5%

17. The ratio of boys to girls at Gauss Public School is 8 : 5. If there are 128 boys at the school, then how many students are there at the school?

- (A) 218      (B) 253      (C) 208      (D) 133      (E) 198

22. A quiz has three questions, with each question worth one mark. If 20% of the students got 0 questions correct, 5% got 1 question correct, 40% got 2 questions correct, and 35% got all 3 questions correct, then the overall class mean (average) mark was

- (A) 1.8      (B) 1.9      (C) 2      (D) 2.1      (E) 2.35

2011

6. 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)  $\frac{3}{5}$

7.  $\frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3}$  equals

- (A)  $3\frac{1}{3}$       (B)  $7 + \frac{1}{3}$       (C)  $\frac{3}{7}$       (D)  $7 + 3$       (E)  $7 \times \frac{1}{3}$

8. Keegan paddled the first 12 km of his 36 km kayak trip before lunch. What fraction of his overall trip remains to be completed after lunch?

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

17. 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)  $\frac{3}{5}$