

PROBABILITY TEST – YR10 - Advanced

Name: _____

Circle your answer for each question.

Question(1)!

In a bag there are 8 discs numbered from 2 to 9. A disc is chosen at random.

What is the probability that the number on the disc is a perfect square or an even number?

- (A) $\frac{1}{8}$ (B) $\frac{1}{2}$ (C) $\frac{5}{8}$ (D) $\frac{3}{4}$ □

Question(2)!

An integer is selected at random from the integers 3 to 10 inclusive.

The probability that the integer is divisible by 2 and 3 is

- (A) $\frac{1}{8}$ (B) $\frac{3}{16}$ (C) $\frac{3}{4}$ (D) $\frac{7}{8}$ □

Question(3)!

A "fair" (unbiased) coin is to be tossed 3 times. On each of the first 2 tosses the result is a head.

What is the probability that the coin will land "heads" on the third toss?

- (A) $\frac{1}{8}$ (B) $\frac{1}{6}$ (C) $\frac{1}{3}$ (D) $\frac{1}{2}$ □

Question(4)!

A normal pack of playing cards has 52 cards. 26 of these are black and 26 are red. The cards are shuffled and a card is drawn out and kept. This card is black. Another card is drawn out.

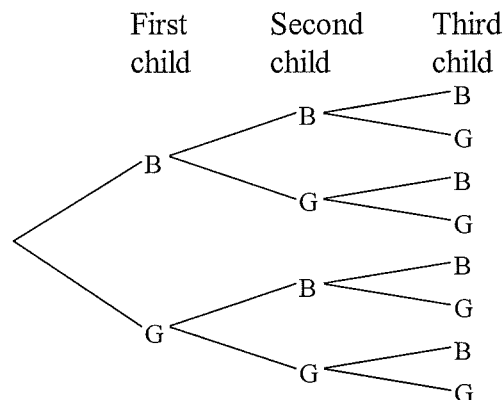
What is the probability that the second card is black?

- (A) $\frac{1}{2}$ (B) $\frac{25}{26}$ (C) $\frac{25}{52}$ (D) $\frac{25}{51}$ □

Question(5)!

If two coins are tossed, the probability of obtaining at least one head is

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

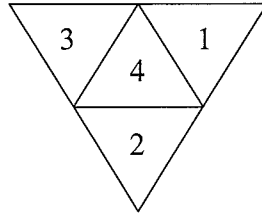
Question(6)!

The tree diagram shows all possible combinations for families with three children. The probability of a three-child family consisting of two girls and one boy is

- (A) $\frac{1}{8}$ (B) $\frac{1}{4}$ (C) $\frac{3}{8}$ (D) $\frac{2}{3}$ □

Question(7)!

A die is made in the form of a tetrahedron (triangular pyramid). The net of the die is shown below.



The faces are numbered 1, 2, 3 and 4. The die is rolled twice. The number on the face that the die lands on is recorded each time. Find the probability that the sum of the two recorded numbers is 4.

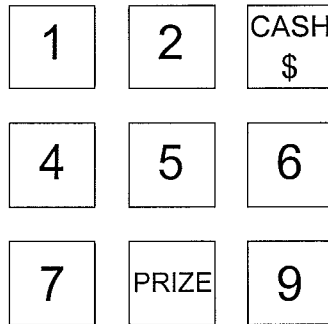
- (A) $\frac{1}{16}$ (B) $\frac{1}{8}$ (C) $\frac{3}{16}$ (D) $\frac{1}{4}$ □

Question(8)!

A jar contains two red lollies and one green lolly of the same size and shape.

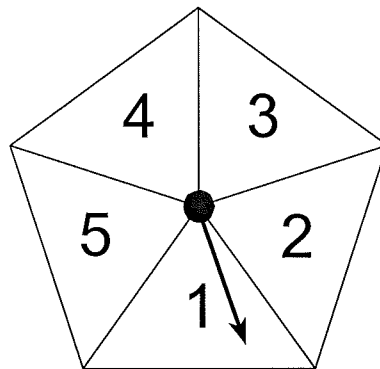
If two lollies are selected at random, what is the probability that they are both red?

- (A) $\frac{1}{6}$ (B) $\frac{1}{3}$ (C) $\frac{4}{9}$ (D) $\frac{2}{3}$ □

Question(9)!

On a television game show there are 9 squares. Behind 3 of the squares there is a cash amount. Behind every other square there is a prize. Two of the squares have already been turned over as shown above. What is the probability of turning over a cash amount next?

- (A) $\frac{2}{9}$ (B) $\frac{2}{7}$ (C) $\frac{1}{3}$ (D) $\frac{1}{2}$ □

Question(10)!

The arrow on this regular pentagon is spun 200 times. Each result is recorded odd or even. If each of the 5 outcomes {1,2,3,4, or 5} is equally likely, which is the most likely result?

- (A) 115 odd and 85 even (B) 105 odd and 95 even
(C) 100 odd and 100 even (D) 75 odd and 125 even □

Question(11)

A shop assistant in a book store wrote down the number of books bought by each of the people entering the shop during one hour. The results are shown below.

Number of Books Bought	Number of People
0	10
1	11
2	6
3	1
4	1
5	1

- (i) How many books were bought during this hour?
- (ii) What is the probability that someone entering the book store bought more than 2 books?

Question(12)

- (a) How many three digit numbers can be formed from the numbers 1, 2, 3, 4, 5 if no repetition is allowed?
- (b) What is the probability that such a number is less than 300?

Question(13)

In a group of 39 students, there are 17 who take French, **25** who take Spanish and 8 who take both. Use a Venn diagram to find:

- (a) How many students take neither language?
- (b) If one student is selected at random, find the probability that this student
- (i) does NOT take French
- (ii) takes French but NOT Spanish

Question(14)

- (a) Comment briefly on the following statement, giving reasons for your view.

“There are 8 competitors in a swimming race. The probability that any one can win is $\frac{1}{8}$ ”

- (b) A poker machine with 5 reels, has only one ‘jackpot’ symbol on each reel. Each reel has exactly 30 card symbols. If there is only one WIN row what is the probability of getting 5 jackpot symbols in this WIN row?

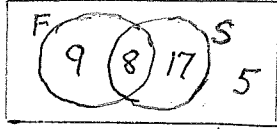
Jackpot	Jackpot	Jackpot	Jackpot	Jackpot
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[Answers]

- «1) → C »
 «2) → A »
 «3) → D »
 «4) → D »
 «5) → D »
 «6) → C »

- «7) → C »
 «8) → B »
 «9) → B »
 «10) → A »
 «11a) ~~→ 35~~ 35
 «11b) ~~→ 1/10~~ $\frac{1}{10}$

12) (a) 60 (b) $\frac{24}{60} = \frac{2}{5}$ 13)



(a) $39 - (9 + 8 + 17) = 5$

(b) $P(\bar{F}) = \frac{22}{39}$

(c) $P(F \cap \bar{S}) = \frac{9}{39}$

- 14) (a) Each competitors chance is not equally likely due to different abilities.

(b) $P(\text{win}) = \frac{1}{30^5} = \frac{1}{24300000}$