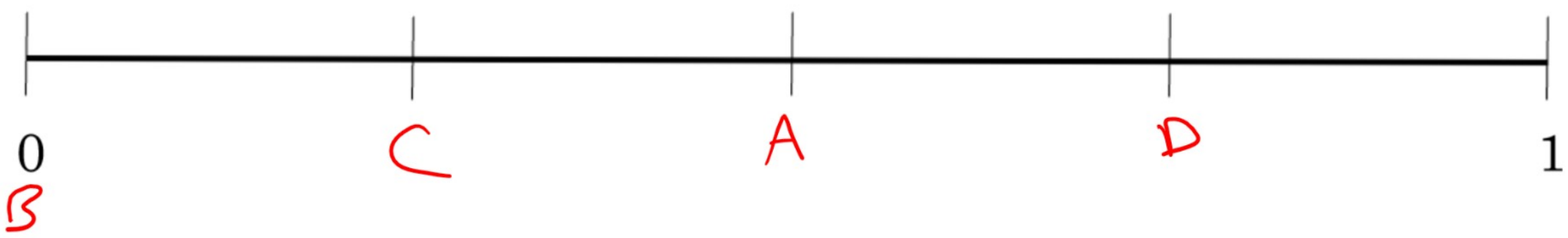
Probability Exam Practice

Q1. David chooses a number at random between 1 and 12 inclusive.
Mark on the probability scale the events A, B, C and D where:

A is choosing an odd number $\frac{1}{2}$
B is choosing a multiple of 15 0
C is choosing a prime number greater than 3 $\{5, 7, 11\}$ $\frac{3}{12} = \frac{1}{4}$
D choosing a number less than 10 $\frac{9}{12} = \frac{3}{4}$



Answer: _____
(4 marks)

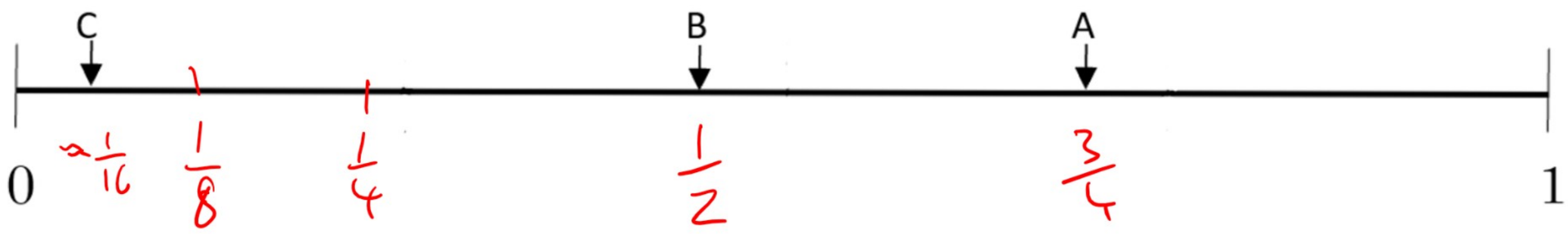
Q2. A fair dice, numbered 1 to 6 in the usual way, is thrown. Work out the probability that a square number is rolled.

Square no.'s : $\{1, 4\}$

$\frac{2}{6} = \frac{1}{3}$

Answer: $\frac{1}{3}$
(2 marks)

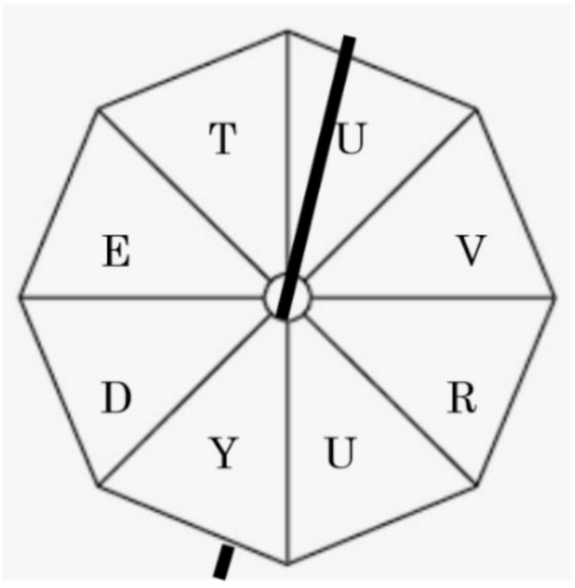
Q3. Estimate the probability of each of the events A, B and C from the probability scale below:



Answer: _____

(3 marks)

Q4. In the English language, a vowel is any of the letters A, E, I, O, or U.



Work out the probability that the spinner lands on:

(i) an E $\frac{1}{8}$

(ii) any letter which is not a vowel $\{T, V, R, Y, D\}$ $\frac{5}{8}$

(iii) the letter A 0

Answer: _____

(3 marks)

Q5. The weather news on channel A states the probability of it snowing the next day is 35%, whereas the weather news on channel B states that the probability is $\frac{2}{5}$. Which channel thinks it is the least likely to snow? You must show your reasoning.

A: 35% chance of snowing

B: 40% chance of snowing

A believes it's less likely.

Answer: A

(2 marks)

Q6. Here is a list of numbers:

2, 4, 5, 8, 4, 3, 0, 10, 15, 18, 7, 14

A number is chosen at a random from the list, find the probability that it is:

(a) an even number (0 is even!)

$\frac{8}{12} = \frac{2}{3}$

Answer: $\frac{2}{3}$

(1 mark)

(b) a number less than 4

$\frac{3}{12} = \frac{1}{4}$

Answer: $\frac{1}{4}$

(1 mark)

(c) a prime number

{2, 3, 5, 7}

$\frac{4}{12} = \frac{1}{3}$

Answer: $\frac{1}{3}$

(1 mark)

Q7. A box contains 18 crayons. 6 are black, 3 are red, the rest are green.
Work out the probability that a randomly selected crayon is:

a) green

9 green

$\frac{9}{18} = \frac{1}{2}$

Answer: $\frac{1}{2}$

(1 mark)

b) not black

$\frac{12}{18} = \frac{2}{3}$

Answer: $\frac{2}{3}$

(1 mark)

Q8. At a Christmas raffle, a total of 200 tickets are sold some of which will win the buyer a prize. The prizes on offer are three £25 prizes, two £50 prizes and one £100 prize. What is the probability that:

a) the buyer wins a £50 prize?

$\frac{2}{200} = \frac{1}{100}$

Answer: $\frac{1}{100}$

(2 marks)

b) the buyer does not win anything?

- There are $200 - 6 = 194$ non-prize winning tickets

$\frac{194}{200} = \frac{97}{100}$

Answer: $\frac{97}{100}$

(2 marks)

Q9. There are red, green, blue and purple counters in a bag. A counter is picked at random from the bag. There are seven times as many purple counters as red counters in the bag.

a) Complete the probability table shown below:

Colour	Red	Green	Blue	Purple
Probability	0.075 (x)	0.1	0.3	0.525 (7x)

$7x + x + 0.1 + 0.3 = 1$

$\Rightarrow 8x + 0.4 = 1$

$\Rightarrow 8x = 0.6$

$\Rightarrow x = 0.075$

Answer: _____

(2 marks)

b) Work out the probability of not choosing a blue counter.

$P(\text{not blue}) = 1 - P(\text{blue})$

$= 1 - 0.3$

$= 0.7$

Answer: 0.7

(1 mark)

c) Rob counts all the counters in the bag and claims that there are 20 counters. Explain why this cannot be true.

$P(\text{red}) = 0.075$

$\Rightarrow$ There would be $0.075 \times 20 = 1.5$ red counters, which is impossible.

Answer: _____

(1 mark)