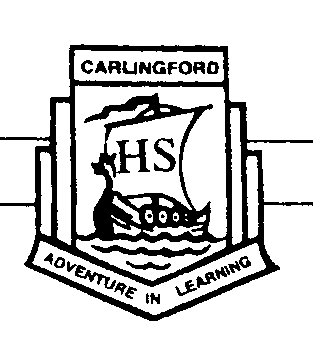
**Carlingford High School**



**Mathematics**

**Year 10 (5.1) Term 3 Exam**

**2018**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Time allowed: 50 minutes*

* Answer all questions in the spaces provided
* All questions are worth 1 mark unless otherwise stated
* Complete the examination in blue or black pen
* Draw diagrams using pencil and a ruler

|  |  |
| --- | --- |
| **Binomial Expressions** | **/26** |
| **Probability** | **/28** |
| **Inequalities and Quadratics** | **/19** |
| **Total** | **/73** | **%** |

**Binomial Expressions**

Question 1 (4 marks)

expansion, expanded, factorisation, factorised

Use the above list to fill in the missing word. (Correct spelling is required)

1. When is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

the answer is

1. When is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

the answer is

1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of

is

1. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of

is is

Question 2 (7 marks)

Expand each expression.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Question 3 (2 marks)

Expand and simplify

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Question 4 (5 marks)

Factorise each expression.

Question 5 (3 marks)

Expand each binomial product.

Question 6 (2 marks)

Find two numbers whose:

1. Product is 6 and sum is 5. \_\_\_\_\_\_ , \_\_\_\_\_\_

(b) Product is -10 and sum is 3. \_\_\_\_\_ , \_\_\_\_\_

Question 7 (3 marks)

Factorise each quadratic expression.

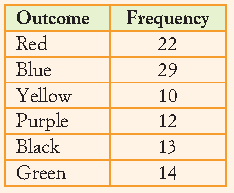
(b)

(c)

**Probability**

Question 1 (5 marks)

The results of a probability experiment are shown in the following table.



1. Find the total of the frequency column.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Find the relative frequency of selecting a red.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Find the relative frequency of selecting a blue or yellow.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Find the relative frequency of not selecting a black.

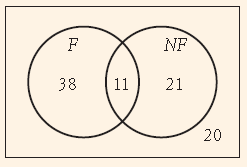
\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Find the relative frequency of selecting a white.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Question 2 (4 marks)

Students were asked whether they preferred to read fiction (F) or non-fiction (NF) books. The results are given below.



1. How many students were surveyed?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Find the probability of selecting a student who only reads fiction books.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. What is the probability of selecting a student who doesn’t read fiction or non-fiction books?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

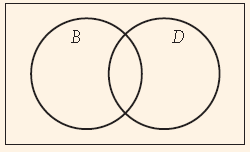
1. Of the students who read non-fiction books, what is the probability of selecting a student who also reads fiction books?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Question 3 (3 marks)

Out of 20 students in a class, 6 have blue eyes (B), 8 have dark hair (D) and 3 have blue eyes and dark hair.

1. Complete the Venn diagram to show the given information.

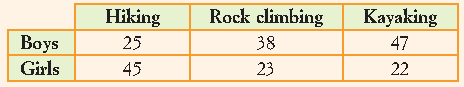


1. What is the probability of selecting a student at random from the class who has dark hair but not blue eyes?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Question 4 (5 marks)

Students were asked what type of activities they wanted to do on the Year 11 Camp. The results are shown in the table.



1. How many students were surveyed?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Find the probability that a student selected at random:

(i) Selected rock climbing.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(ii) Is a girl who selected kayaking.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(iii) Is a boy who didn’t select hiking.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. If a boy was selected at random, what is the probability that he wanted to do hiking?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Question 5 (5 marks)

Two marbles are taken from a bag containing a red (R), a blue (B) and a yellow (Y) marble.

1. If the first marble is replaced before the second is taken, complete the list of possible outcomes.

RR, RB, RY, \_\_\_\_\_\_\_\_, BB, BY, YR, YB, YY

1. Find the probability of drawing:

(i) Two red marbles.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(ii) At least one blue marble.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(iii) Two marbles with different colours.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. If the first marble is not replaced, what is the probability of selecting a red and a blue marble?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Question 6 (2 marks)

State whether the following events are dependent or independent.

1. Tossing a tail on one coin and a head on another coin.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Electing the school captain, then electing the vice-captain.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Question 7 (4 Marks)

Unjumble the following words from this topic.

1. altverie

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(b) reet

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(c) margaid

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. nevn

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Inequalities and Quadratics**

Question 1 (3 marks)

Solve each quadratic equation.

Question 2 (4 marks)

Solve each quadratic equation.

Question 3 (4 marks)

Write one of the given meanings next to the matching symbol.

* Is less than
* Is greater than
* Is less than or equal to
* Is greater than or equal to

1. ≤ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(b) > \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. ≥ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. < \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Question 4 (2 marks)

Graph each inequality on the given number line.





Question 5 (2 marks)

Write the inequality represented by each number line.





Question 6 (4 marks)

Solve each inequality.

**END OF TEST**