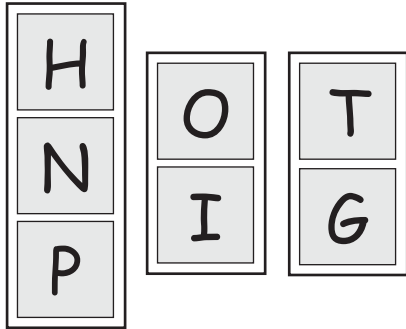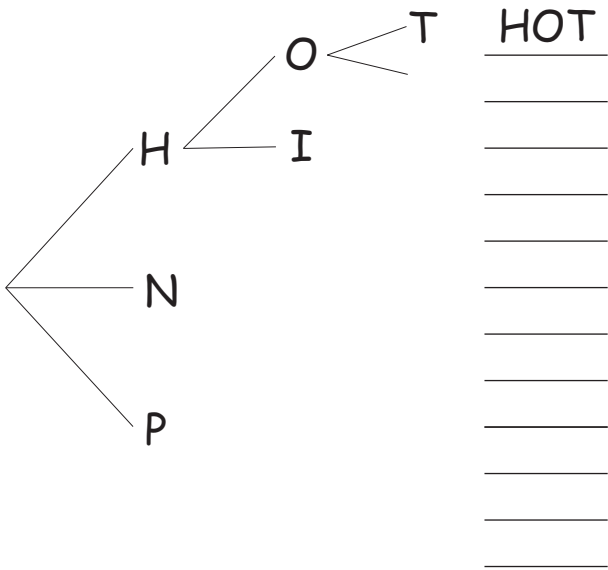*Name*: _____

1. A primary school student is given three sets of letters to make three-letter words.
The first letter of the words can be H, N or P.
The second letter of the words can be O or I.
The third letter of the words can be T or G.

| H N P | | O I | | T G |

(a) Draw a tree diagram to show all the possible combinations that can be formed. This has been started.

H — O < T   HOT
       I
N
P

(b) How many different combinations are there?

(c) Circle the combinations that are words that could be found in a dictionary.

(d) If a combination is formed randomly, what is the probability that it is a word? (Give answer as a fraction)

2. Phil goes for a bike ride each morning. He has three different coloured bikes (red, blue and green) and three helmets that are the same colours as the bikes (red, blue and green). One morning he gets a bike and helmet while it is still dark and can't see the colours.

(a) Draw a tree diagram to show all the different combinations of coloured bikes and helmets.

(b) What is the probability (as a fraction) that Phil will be wearing matching colours?

3. An explorer was trekking through a remote forest and discovered a locked treasure chest outside two caves.
There was a message above the treasure chest describing how to find the key to open the chest. The message read:

What is the probability (as a fraction) of finding the correct key?

> *Each cave has two tunnels,*
> *In each tunnel find two rocks,*
> *On each rock are two boxes,*
> *And two keys in each box.*
> *By choosing wisely,*
> *The treasure you'll see,*
> *But the chest will explode,*
> *If you try the wrong key.*