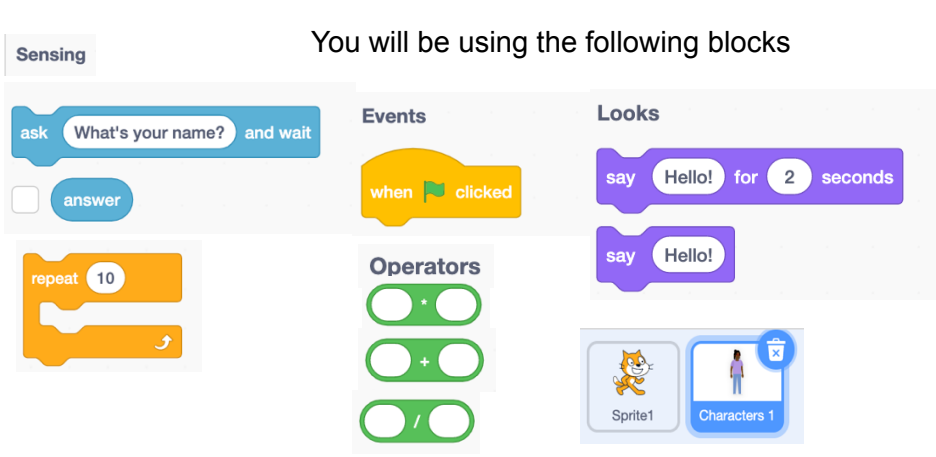
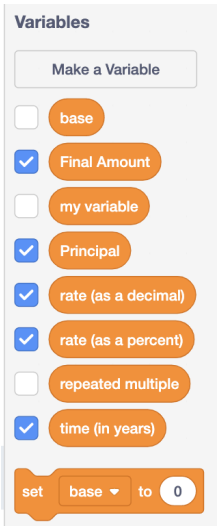
CODING WITH SIMPLE AND COMPOUND INTEREST

PART A – Simple Interest code scramble and test
PART B – Compound Interest code and questions
PART C – Using formulas and testing your code
PART D – Using code to compare the effects of changing different factors

You will be using the following blocks





PART A – Simple Interest

Unscramble the following code. Write the order that the code should appear in on the lines, and then code it in scratch to ensure it runs.

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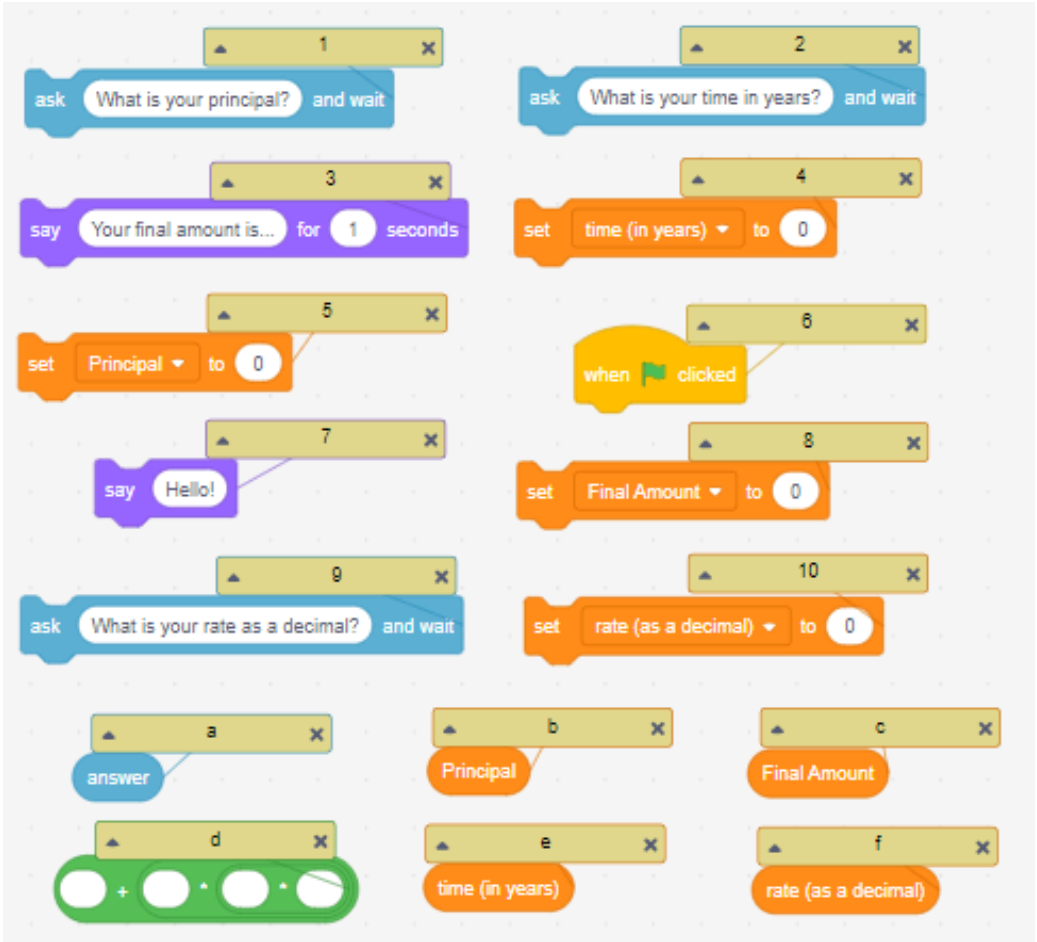

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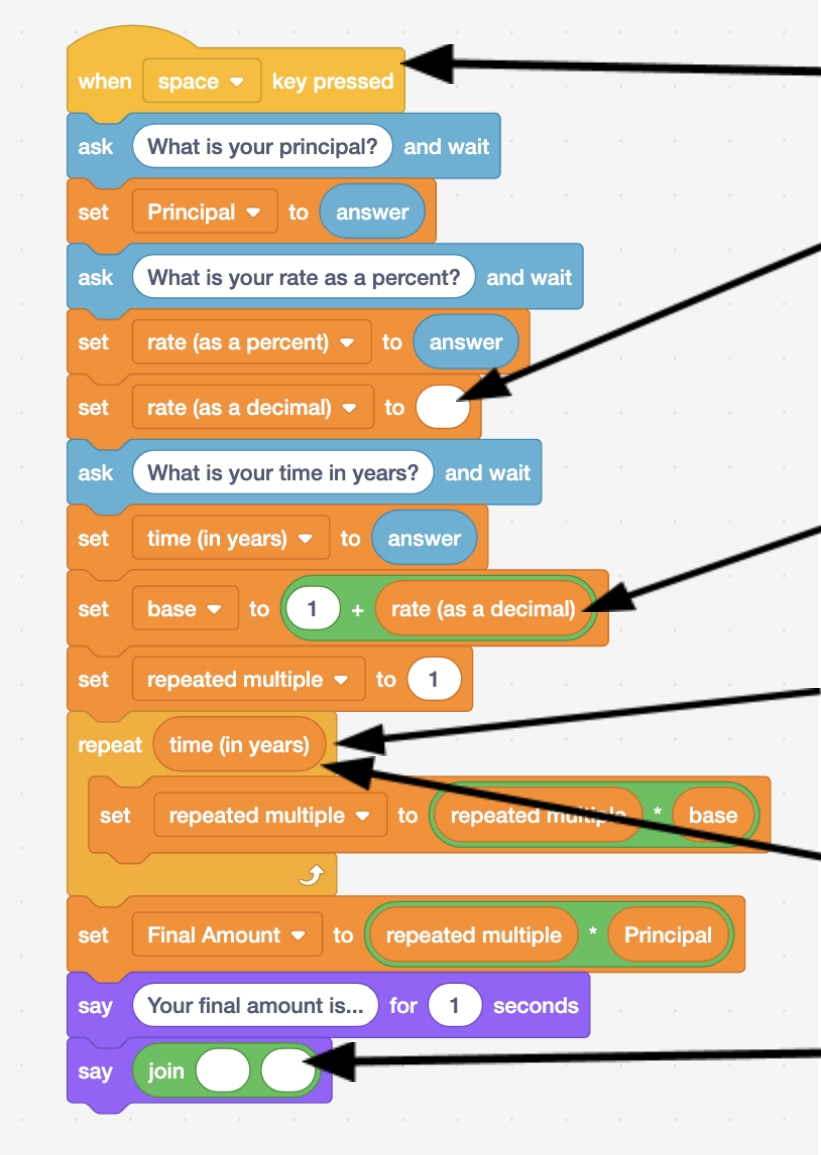
PART B – Compound Interest
Answer the following questions based on the code given.



1) What does this Events block do?

2) How would you code the program to convert the given %rate to decimal? Describe which blocks you would use.

3) Why do we set the base to "1 + rate"?

4) What is the purpose of the repeat?

5) Why is the repeat set to "time"?

6) How would you code the program to output the final amount with a $ sign?

7) Select a different sprite and enter the above Compound Interest code. Do not delete your Simple Interest code.

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PART C – Testing your code
Answer questions 1 & 2 by hand and then test your code:

Simple Interest

$$A = P + Prt$$

1. You deposit $3500 in an account that pays 8.4% simple interest. Find the balance after 5 years.

Compound Interest

$$A = P(1 + r)^t$$

2. You deposit $1500 in an account that pays 6% interest compounded yearly. Find the balance after 5 years.

Once you determine your code works correctly, answer the following questions using your code.

3. Which option gives the greater balance? Show the balance for each option.

Option A	Option B
Put $500 in an account that pays 7.5% interest compounded yearly for 9 years.	Put $700 in an account that pays 6.5% simple interest for 9 years.

Which investment is better?

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PART D – Using code to compare the effects of changing different factors

4. Which option gives the greater balance? Show the balance for each option.
   a) Put $2000 in an account that pays 8% interest compounded yearly for 8 years.
   b) Put $2000 in an account that pays 10% interest compounded yearly for 8 years.

   Option A: Option B:

5. What principal amount would you need to put in the account at 8% to have it equal the account at 10%?

6. Which option gives the greater balance? Show the balance for each option.
   a) Put $5000 in an account that pays 5.5% interest compounded yearly for 14 years.
   b) Put $8000 in an account that pays 5.5% interest compounded yearly for 10 years.

   Option A: Option B:

7. What effect affects the final amount in an account more: Time, Principal amount, or rate? Explain your reasoning.

<u>Extension</u>

8. Change the coding to make the code depreciate instead of appreciate.
   The original value of a purchase is $1450. It depreciates at a rate of 5% per year every year. What is the value of the amount after 5 years?