




Turtle Playground D - Challenge Cards

1. Using **Text** blocks make and run this short program:




2. Now make a program that says: "Goodbye!"

1. Hello Goodbye

Using the print block to output text.

1. Try out this very short program:



A computer uses codes instead of names for colours. Red is `#FF0000`

2. Now find the codes for some other colours.

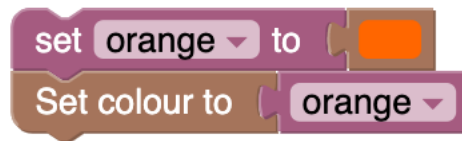
2. Output "colours"



Turtle Playground D - Challenge Cards

A computer uses codes instead of names for colours. Orange is #FF6600

1. In the **Variables** tab, click *Create variable*.
2. Type in 'orange' in the text entry box that appears, and click OK.
3. Using the new blocks that you have just made, make this program:



4. Press the Run button. What happens to the turtle?

3. Remembering colours

This Card uses the **Variables** blocks.

Your programs can ask for some keyboard input and store it in a variable.

1. In the **Variables** tab, click *Create variable*.
2. Type in 'name' in the text entry box that appears, and click OK.
3. Using the new variable blocks that you have just made, and the blocks in the **Text** tab, make and Run this program:



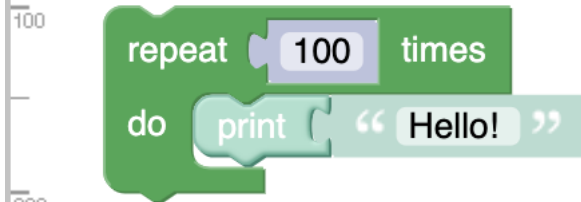
4. Text variables

Asking a person's name.



Turtle Playground D - Challenge Cards

1. Make this annoying program:



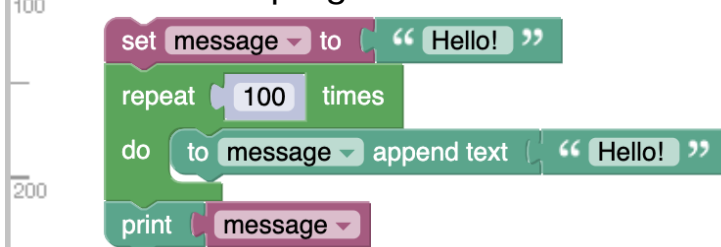
2. When you are bored, either close the Playground D window or Refresh the website page – it is the only way to stop!

5. Loopy Text

Some programs will not stop.

1. Create a new variable called 'message'.

2. Make this program:



3. Press Run to see what happens.

4. Experiment with this program so that you understand it better.

6. Loopy Text 2

Make sure you have tried Challenge Card 5 before trying out this one.



Turtle Playground D - Challenge Cards

Fact: The distance from the centre of a circle to its edge is called the radius.

1. Create a new variable called 'radius'.

2. Make this program:



3. Press Run and enter a number when you are asked to.

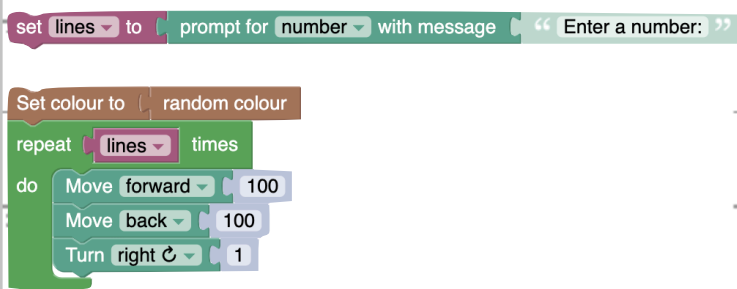
4. Try running your program again and enter a different number.

7. Draw a circle

Use the 'prompt for' block in the **Text** tab to ask for a number.

1. Create a variable called 'lines'.

2. Make this program:



3. Press Run and enter a number when you are asked to.

4. Try running your program again and enter 100, then 1, then 360.


8. Draw a bit of a circle

Create a variable called 'lines' and make and Run the program shown above.

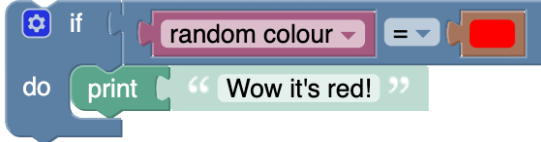


Turtle Playground D - Challenge Cards


1. Create a new variable called *random colour* and then assign a random colour to it:



2. Next use the 'if' block from the **Logic** tab to say if it happens to be red:



3. Finally add some code to show what the random colour looks like:




4. Save your program for use in Card 10.

9. Using 'if' blocks


The IF block is found in the **Logic** tab.


The 'if block video' may help you with this card.

In Card 9 you wrote the following program:



1. Get your saved program from Card 9 (or write it again).

2. Click on the cog  in the 'if' block and add an 'else' slot. Use this to add another print block. (Hint: There is a help video.)



3. Save your program for use in Card 12.

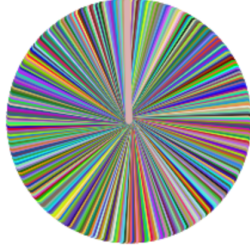
10. Using 'if' and 'else'

Make sure you have tried Challenge Card 9 before trying out this one.



Turtle Playground D - Challenge Cards

1. Write a program that uses your Blockly Turtle skills to write a program that makes an image of your choice. Here is an example:



2. When you are happy, add some blocks to print out when the program has finished:


Finished!

11. Say: 'Finished!'

The IF block is found in the **Logic** tab.

The 'if block video' may help you with this card.

Logic blocks can also be used to test if something is 'not equal to' something else:



1. Get the program you saved in Card 10 and then change `=` to `≠`. Run the program to see that it outputs the incorrect answer!

2. Try to fix the program by only changing the 'print' blocks.

3. Run it a few times to see if the random colour produced is red. This is very unlikely!

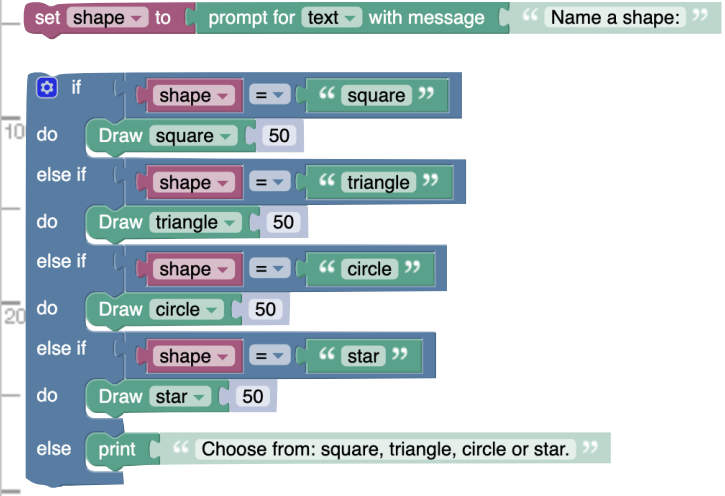
12. Not equals

Make sure you have tried Challenge Card 10 before trying out this one.



Turtle Playground D - Challenge Cards

1. Make and test the program below:



```
set shape to prompt for text with message "Name a shape: "
```

if shape = "square" do Draw square 50

else if shape = "triangle" do Draw triangle 50

else if shape = "circle" do Draw circle 50

else if shape = "star" do Draw star 50

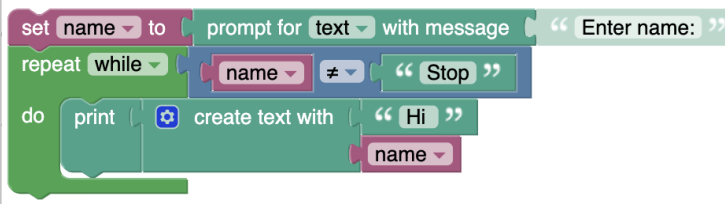
else print "Choose from: square, triangle, circle or star. "

2. Add another possible choice: 'turtle'.
Your program should then be able to draw a 'turtle' shape when turtle is typed into the text entry box.

13. Shape choosing

if, else if and else

A 'while' loop keeps looping while a test is true.
The program below keeps asking for a name and then saying hello.



```
set name to prompt for text with message "Enter name: "
```

repeat while name ≠ "Stop" do print create text with "Hi " name

1. Write the program, Run it and enter your name.

2. Find out what you need to type to stop your program running.

`name ≠ "Stop"` is true for any name entered, unless name is Stop.

14. The 'while' loop

There is another kind of loop available in Playground D.



Turtle Playground D - Challenge Cards

A 'while' loop keeps looping while a test is true. This makes it very easy to make a loop that never stops! The program below will keep saying 'Hello' forever while 'Y' is entered. Can you see why it will stop if anything else is typed in?

```
repeat while true
do
  set input to prompt for text with message "Continue?(Y): "
  if input = "Y"
  do
    print "Hello!"
  else
    print "Finished."
    break out of loop
```

1. Make the program shown above and try it out.

15. An infinite loop

Infinite loops never stop. Make sure you complete Card 5, *Loopy Text*, before trying this one.

1. Read the program below and try to predict what it will do.

2. Build the program, test it out, and then improve it.

```
repeat while true
do
  set input to prompt for text with message "Enter L, R, F or X: "
  if input = "L"
  do
    Turn left 90
  else if input = "R"
  do
    Turn right 90
  else if input = "F"
  do
    Move forward 20
  else if input = "X"
  do
    print "Thanks for playing."
    break out of loop
  else
    print "Enter L, R, F or X only."
```

16. A drawing game

This game needs to go on forever until the player wants to stop.