Green Shell Challenge Cards

Teachers Notes:

This set of Challenge cards is designed to be used with the Blockly Turtle resources. The full collection of resources for teachers is found in the **Turtle** area on bebras.uk.

This set of cards is for pupils who have achieved their Green Shell Programmer award and are now working towards their Purple Shell Programmer award.

Preparation:

1. When the pupils login to their computers they should head to the **Turtle Playground - Green**. They should be directed to: bebras.uk -> Turtle -> click on the Green turtle.

2. These cards should be printed out (size to:100% on A4 card, or "fill the paper" on A5 card) and laminated. Each pupil also needs their own Yellow Shell Record Card (which should not be laminated as they have to be written on). When a pupil completes a Challenge Card, its number can be written in their Record Card (in one of the clip boards).

3. In the first lesson, the teacher should show the students how to access **Turtle Playground - Green** and the Introduction video on Card 0. Note **Card 0** is for the teacher to use with the class. Pupils can start with **Card 1**.

4. Students should complete a minimum of 7 cards of the 13 provided, so some choice is available. They should also complete 3 of their own projects.
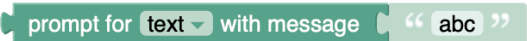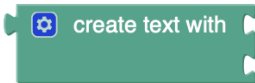
Green Shell Challenge Cards

Code Blocks introduced in Turtle Playground - Green:

There are three new blocks in the *Turtle* folder in the toolbox:

Wait **1**

Display text " "

Font Arial
Font size 18
normal

A new *Text* folder containing these blocks:

" "

create text with

to item append text " "

length of " abc "

to UPPER CASE " abc "

print " abc "

prompt for text with message " abc "

A new *Variables* folder that has a *Create variable…* button that will make sets of buttons for any variables created by the children:

Create variable...

set item to

change item by 1

item
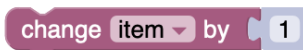
Green Shell Challenge Cards

0

1. Show your pupils how to go to *Turtle Playground - Green*

2. Show your class the three videos

3. Provide each pupil who has achieved their Green Shell award with their new Record Card.

4. Distribute the pupil's Challenge Cards.

For the teacher of pupils working towards their Purple Shell Turtle Programmer award using Turtle Playground - Green
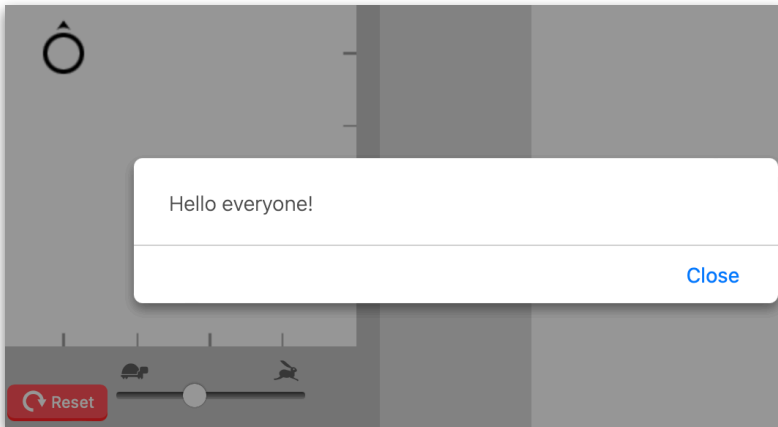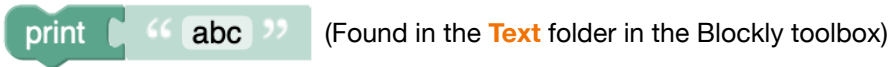
Hello Goodbye

Challenge:

Write a program, that says "Hello everyone!" in a pop-up window, with this block:

`print " abc "`   (Found in the **Text** folder in the Blockly toolbox)

Extra:

2. Write a program that says "Goodbye!".

Drawing Text

Challenge:

Write a program, that makes the turtle write "Hello everyone!" on the drawing area, using this block:

Display text " " (Found in the **Turtle** folder in the Blockly toolbox)

Extra:

The **text** displayed in the drawing area is not ideal!

1. Can you rotate the text so it is not pointing up the page?
2. Can you change the colour of the text?
3. Can you make the **font** larger?
4. Can you get the Turtle out of the way of your text?

Hint:

The extra challenges might need these new code blocks found in the Turtle folder of the toolbox:

Turn right ↻ 90

Font Arial
Font size 18
normal

Output a Colour

When your programs draw something or **print** a message, either on the drawing area or in a **pop-up window**, the drawings or text is **output**.

Challenge:

Try out this very short program:

```
print ( [ ] )
```

Extra:

Computers use different codes for each colour.
The code for red is #ff0000.

1. Can you find the codes for some other colours?
2. Find out what happens with a colour if you use the *Display text* block instead of the print block.
3. Can you make the **font** larger?
4. Can you get the Turtle out of the way of your text?

Text Input

When our programs can get **input** as well as **output**. Input can come from a sensor such as a microphone or a camera. One of the simplest inputs is to get the **user** to type something on the keyboard.

Challenge:
Write a program that:
1. asks for the users name
2. stores the users name in a **variable** called "name"
3. **prints** a Hello message that includes the users name.

Extra:
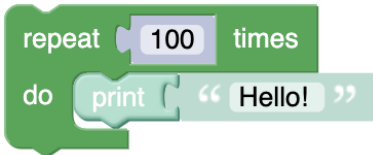Extend your program by, also asking for the user's favourite animal, answering with yours and then saying Goodbye.

Loopy Text

Challenge:

1. Make this annoying program:

```
repeat ( 100 times
do  print ( " Hello! "
```
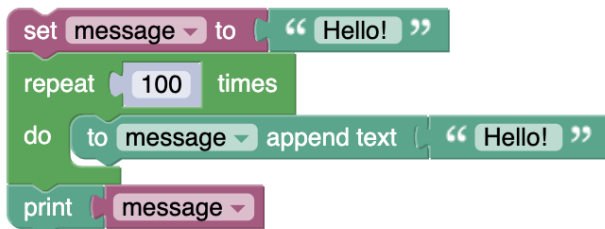
2. Run your program.

3. When you are bored, either close the Playground - D window or *Refresh* the website page – these might be the only ways to stop!

Information:

Some programs will not stop. It is important to know what to do if you accidentally write one of these.

Extra:

Write this program but before pressing Run, try to predict what will happen.

```
set message ▼ to ( " Hello! "
repeat ( 100 times
do  to message ▼ append text ( " Hello! "
print ( message ▼
```

Pretty Talk

In this challenge we want the **user** to chat with the Turtle on the screen.

Challenge:

1. Write and run this program

```
Font  Arial
Font size  18
normal
Turn  right ↻   90
Set position to X   100
        and Y   100
Display text   " What is your name? "
Wait   2
set  name  to   prompt for  text   with message   " Enter your name: "
Set position to X   100
        and Y   150
Display text   name
Wait   2
Set position to X   100
        and Y   200
Display text   create text with   " Hello "
                                    name
```

2. Improve your program by hiding the turtle.
3. Change the colour of the user's **text**, that appears in the drawing area, to a colour other than black.
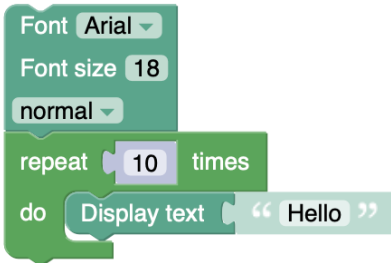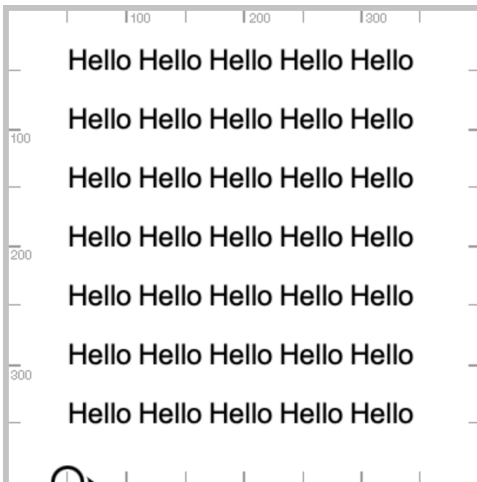4. Make the conversation a bit longer.

Loopy Text 2

Challenge:

1. Write and run this program

Font Arial
Font size 18
normal
repeat 10 times
do Display text " Hello "

2. Think about what is happening.

3. Write a program that **outputs** something like this:

| 100 | 200 | 300 |

Hello Hello Hello Hello Hello

Hello Hello Hello Hello Hello

100

Hello Hello Hello Hello Hello

Hello Hello Hello Hello Hello

200

Hello Hello Hello Hello Hello

Hello Hello Hello Hello Hello

300

Hello Hello Hello Hello Hello
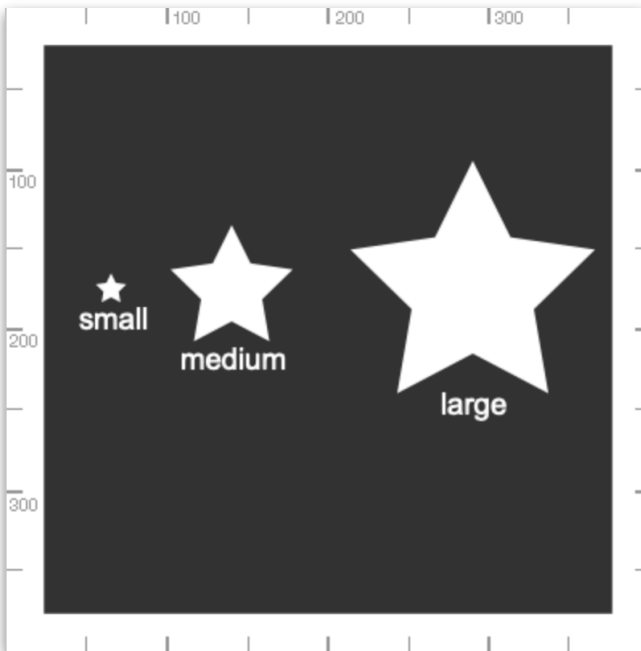
Labels

Challenge:

Write a program to create a diagram with labels like the one below.

Extra:

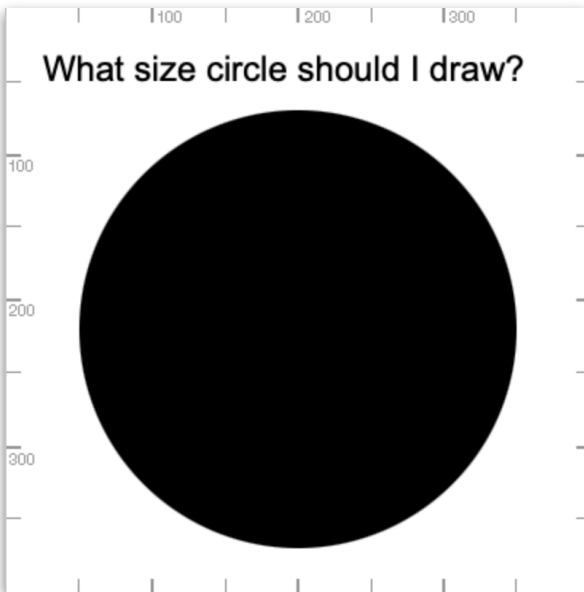Does this inspire you to create any other labelled diagrams?

Draw a circle, any circle

Challenge:

Write a program that:

1. Asks the user what size circle they want.
2. Draws a circle with that **radius**.

Hint:

You will need to create a **variable** to store the number the **user inputs**.

Lines

Challenge:

1. Write this program:

```
set lines to    prompt for text with message  " Enter a number: "
repeat  lines  times
do   Set colour to    random colour
     Move forward   150
     Move back   150
     Turn right ↻   2
```
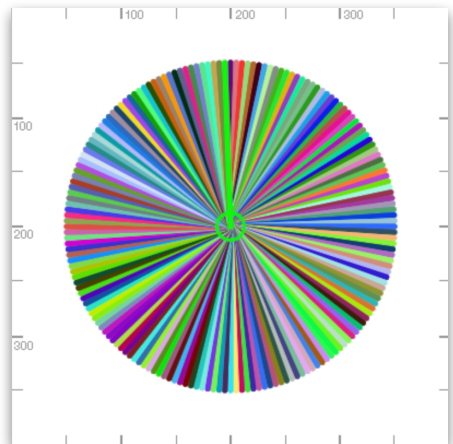
2. Run the program and enter 180.

3. Try changing the **value** the turtle
   turns from 2 to 1.

4. Try entering numbers other
   than 180.

Hint:

To make a smooth edged circle:

• delete the *set colour to* block,
• move backwards and forwards 100,
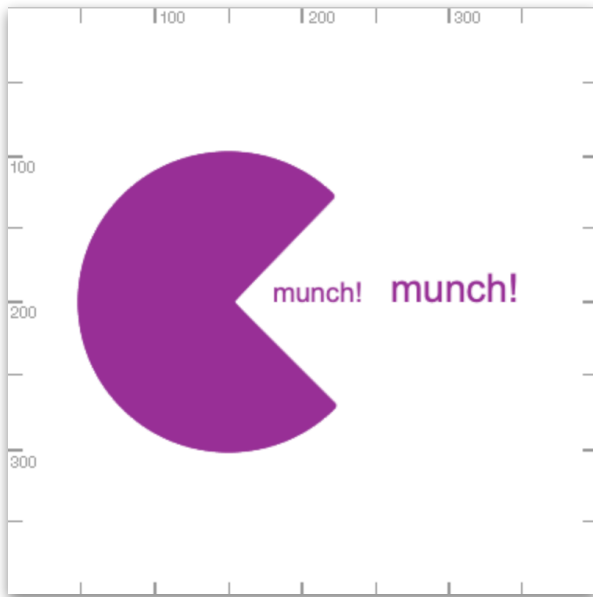• turn 1,
• and draw 360 lines.

munch! munch!

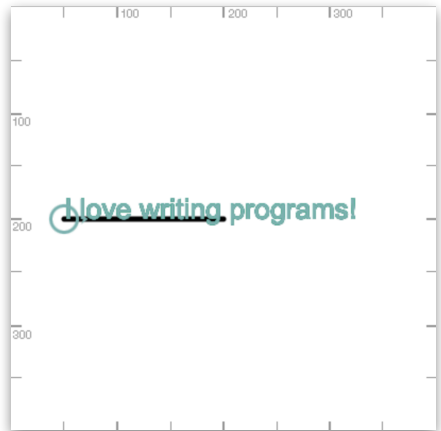## Challenge:

Write a program that creates an image like this:

Colourful message

Challenge:

1. Copy and run this program:

```
Turn  right ↻    90
Move  back ↕     150
repeat    10    times
do    Set colour to    random colour
      Display text  " I love writing programs! "
      Wait    1
```

It will produce something like the output shown above.

2. Edit your program to remove the line and the turtle. The **output** should then look similar to that shown in the image below.

Extra:

The program includes a *Wait* block that waits for 1 second every time the loop runs. Try experimenting with the speed slider:

1. Set it to run at tortoise speed.
   Is there still 1 second between each change of colour?
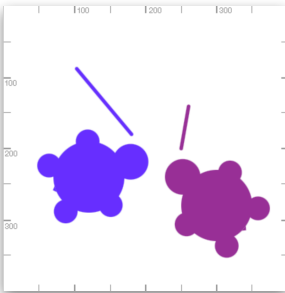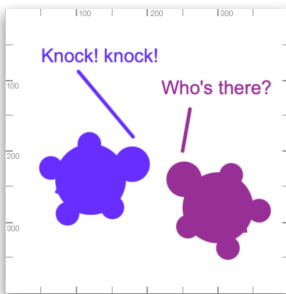2. Set your program to run at hare speed.

That's so funny!

Challenge:

1. Write a program to display two turtles and two lines like this:

(The first turtle must be blue.)

2. Make the **text** "Knock! knock!" appear on screen in blue and, 2 seconds later, add the text "Who's there?"

Hint:
To erase text already on the screen, draw a white box over it:

3. After 2 more seconds replace the blue text with "Blue".
4. 2 seconds later replace the purple text with "Blue who?"
5. Finally replace the purple text with "Please don't be sad."