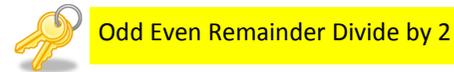


Odd & Even

Year 1 & 2 pupils have been learning about odd and even numbers. Use this guide to help you create a program to test their knowledge.



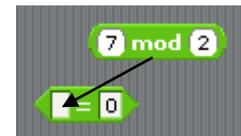
Step 2 Did you work out that the speech bubble was the remainder? Try these pairs of numbers in the mod block and fill in the remainder on the chart.

Left Number	Right Number	Speech Bubble
4	2	
8	2	
10	2	
3	2	
5	2	

Step 1 Drag out the mod block. Type in these numbers. Left click on the block. Try some other numbers. What is happening in the speech bubble?

What remainder do all of the even numbers leave when divided by 2?

What remainder do all the odd numbers leave when divided by 2?



Answer to Step 4 & 5
Don't forget to tick
the box now you
have looked

```

ask Enter number and wait
if answer mod 2 = 0
  say Even for 2 secs
else
  say odd for 2 secs
  
```

This work is licensed under the Creative Commons Attribution-NonCommercial 3.0 Unported License. To view a copy of this license, visit <http://creativecommons.org/licenses/by-nc/3.0/> or send a letter to Creative Commons, 444 Castro Street, Suite 900, Mountain View, California, 94041, USA.

Name _____

```
7 mod 2 = 0
```

Step 4 Can you use these blocks to say either odd or even if remainder divided



```

say Hello! for 2 secs
say Hello! for 2 secs
if
else
    
```

Step 5 Can you use an ask and answer block so the user can type in their own numbers to be tested?

```

ask What's your name? and wait
answer
    
```

If you want the answer to step 4 and 5 you can look on the last page. However you must tick here if you do.



Step 6 Have a look at the **flowchart**. Can you draw lines to match the Scratch blocks to the flow chart and create an adapted version of your odd and even selection program in which the right answer goes inside a variable called odd or even.

TIP
You will need to remove the say blocks from step 4 & 5

LOGICAL REASONING If the user entered number has a remainder of 1 what will be inside the odd or even variable by the end of the program?

```

say Hello! for 2 secs
join join hello is world
answer odd or even
say join join answer
set odd or even
    
```

Step 10 Build and test the code
ONLY DO THIS IF YOUR TEACHER HAS CHECKED YOUR SOLUTION TO STEP 9

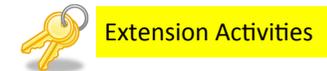
Step 11 Can you find a way to repeat this test 10 times

Step 12 Can you find a way to give the user a point if their answer is correct? Remember users should start with a clean score every time they attempt this test.

Step 13 Can you find a way to report the score to the user at the end of the test?

Step 14 Can you find a way to report the score after every question and tell the user how many points they have got correct out of how many questions done. For example **after 3 questions you have scored 2 points**

You may ask your teacher for a hint if you are struggling with step 14 this but will need to put a tick in this box.



Further Study

Could you adapt this program to check if numbers are part of a times table? Could you get the user to set which table before starting the test?

LOGICAL REASONING

Would you need more than four possibilities if the random number was between 1 and 1000? _____

If this block was changed to this  What else would need to be changed to allow the program to work?



Step 9 Here is the main code for our odd and even program.

Before you can build this you need to transfer the information in your chart from Step 8 into the four if selection blocks below.

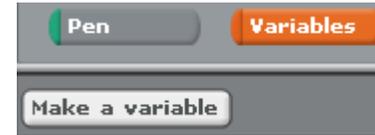
CHECK WITH YOUR TEACHER THAT YOU HAVE TRANSFERRED THE INFORMATION CORRECTLY BEFORE MOVING ON



Match All Possibilities to Code

```

set rannum to pick random 1 to 100
ask join Is join rannum odd or even? and wait
if rannum mod 2 = 0
  set odd or even to even
else
  set odd or even to odd
if odd or even = [ ] and answer = [ ]
  say [ ] for 2 secs
if odd or even = [ ] and answer = [ ]
  say [ ] for 2 secs
if odd or even = [ ] and answer = [ ]
  say [ ] for 2 secs
if odd or even = [ ] and answer = [ ]
  say [ ] for 2 secs
  
```



Draw lines from blocks to flow diagram like this

create a variable called odd or even



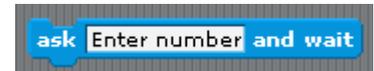
Start when green flag clicked



Match Blocks to Flowchart

Flow Diagram

Ask the user to enter a number and check if it is odd or even



Does the user entered number when divided by 2 have a remainder of 0?

Set the odd or even variable to odd

Set the odd or even variable to even



Say the users number is whatever is inside the odd or even variable



Optional Step 6a ASK YOUR TEACHER IF THEY WANT YOU TO DO THIS. Can you adapt the program created in step 6 so that it checks to see if a number is part of the 8 times tables? You may want to create a new variable called 8x?

Can you adapt the program further so that the user can choose which times tables they are checking for?

Step 7 AND allows two conditions to be checked. If **both** conditions are met then code can be triggered underneath. Take a look at these everyday examples to help you understand **AND**. Can you answer the questions underneath?

if Put ball in opposition net **AND** Not Offside

GOAL  Understand AND

No code needed for steps 7, 8 & 9

Can you score a goal if you are **only** not offside _____

if Frog legs kick **AND** Breaststroke arms

Swim breaststroke

Can you swim breaststroke if you meet both conditions? _____

if Random number is even **AND** User says it is even

Correct

Step 8 Later on we are going to use **AND** to check to see if a random number is **EVEN AND** the user has typed in **EVEN** similar to our if selection above. Before we can do this we need to work out all the possibilities so we can create if selection code for each one. *Each possibility on every row will be different.* The first one has been done for you. Complete the table, you can work with a partner to discuss this.

Random Number ODD or EVEN		User Choice ODD or EVEN	Triggered Code CORRECT or WRONG
EVEN	AND	EVEN	CORRECT
	AND		
	AND		
	AND		

 Find All Possibilities

Check to see if you have found all the correct possibilities with your teacher before moving on.

Now move on to the next page.