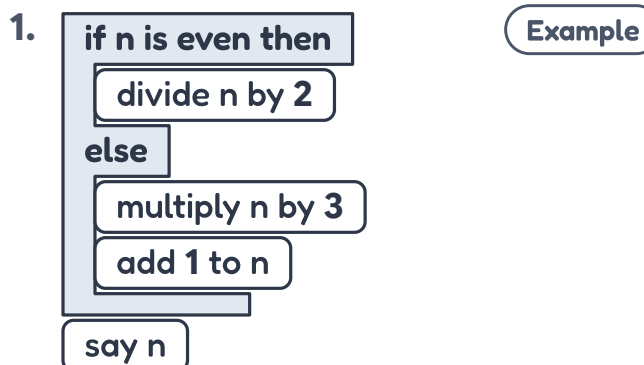
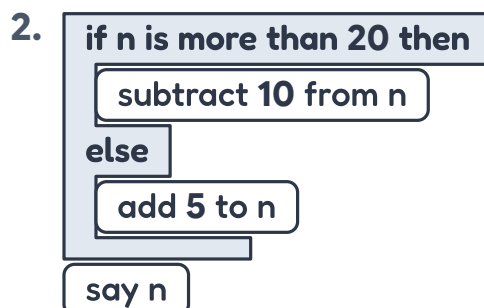


If-Then Code

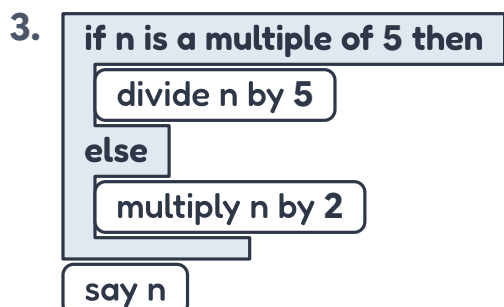
Run each number machine. Write the number that comes out.



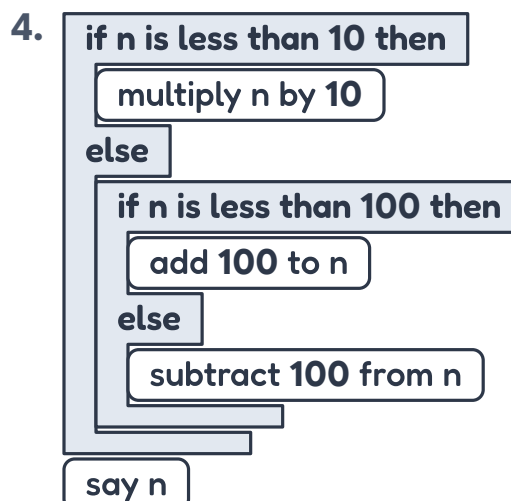
In	8	5	12	7	20
Out	4	16	6	22	10



In	25	14	20	31	9
Out					



In	35	6	50	13	40
Out					



In	7	45	150	10	99
Out					

If-Then Code

Run the code for each number. Write the number in its box.

1.

if n is even then

put n in box A

else

if n is more than 50 then

put n in box B

else

put n in box C

Numbers

Example

64	17	83	30	51
9	76	45	98	50

Box A

Box B

Box C

64

2.

if n is more than 100 then

put n in box A

else

if n is a multiple of 10 then

put n in box B

else

put n in box C

Numbers

120	40	75	300	90
101	8	110	63	100

Swap the checks: ask about multiples of 10 first. Which numbers go to a different box?

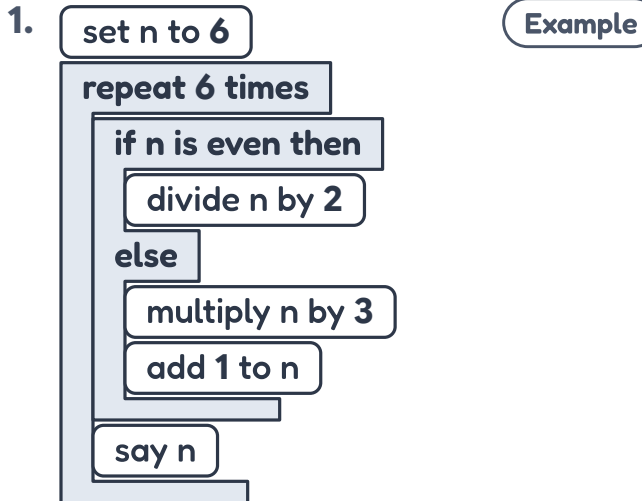
Box A

Box B

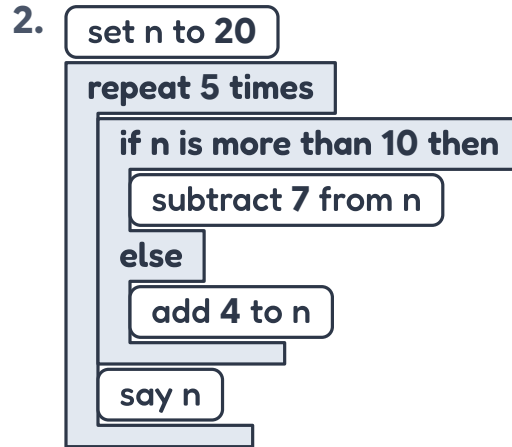
Box C

If-Then Code

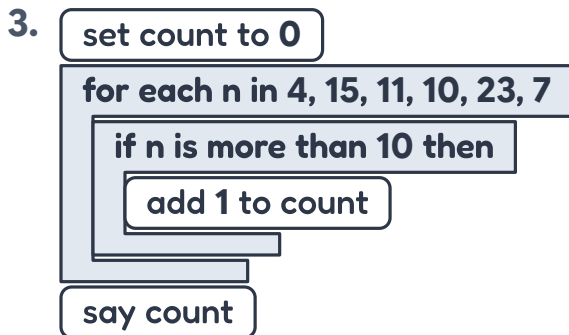
Run each program. Write what it says, in order.



It says 3 10 5 16 8 4



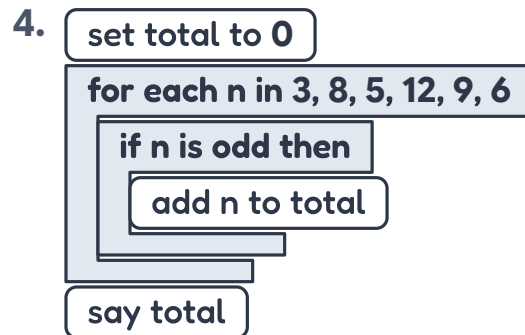
It says _____



It says _____

Change more than 10 to more than 9.

Now it says _____



It says _____

Change odd to even.

Now it says _____

If-Then Code

Run the code. Find the line with the bug and write the fix.

1. **Goal** Say the numbers 3, 6, 9, 12, 15.

```

1  set n to 3
2  repeat 4 times
3    say n
4    add 3 to n
  
```

It says 3, 6, 9, 12

Bug on line 2

Example

Fix repeat 5 times

2. **Goal** Halve even numbers. Add 1 to odd numbers.

```

1  if n is odd then
2    divide n by 2
3  else
4    add 1 to n
5  say n
  
```

For n = 8 it says _____

Bug on line _____

Fix _____

3. **Goal** Say star for 50 or more, else dot.

```

1  if n is more than 50 then
2    say star
3  else
4    say dot
  
```

For n = 50 it says _____

Bug on line _____

Fix _____

4. **Goal** Count the numbers more than 10.

```

1  set count to 0
2  for each n in 4, 15, 11, 8, 20
3    if n is more than 10 then
4      add n to count
5  say count
  
```

It says _____

Bug on line _____

Fix _____

If-Then Code

Both programs do the same thing. Run them. Circle the shorter one.

1. **A**

```

add 4 to n
add 4 to n
add 4 to n
say n
  
```

B

```

add 12 to n
say n
  
```

For $n = 5$

Example

A says 17

B says 17

Shorter **A** **(B)**

2. **A**

```

repeat 5 times
  add 5 to n
say n
  
```

B

```

repeat 3 times
  add 5 to n
repeat 2 times
  add 5 to n
say n
  
```

For $n = 3$

A says _____

B says _____

Shorter **A** **B**

3. **A**

```

if n is more than 5 then
  add 3 to n
else
  add 3 to n
say n
  
```

B

```

add 3 to n
say n
  
```

For $n = 8$

A says _____

B says _____

Shorter **A** **B**

4. **A**

```

multiply n by 8
say n
  
```

B

```

multiply n by 2
multiply n by 2
multiply n by 2
say n
  
```

For $n = 6$

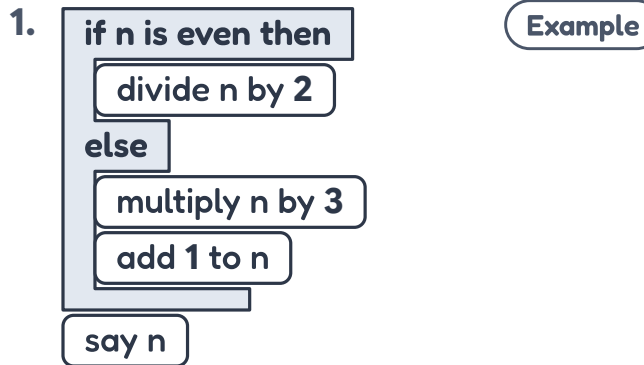
A says _____

B says _____

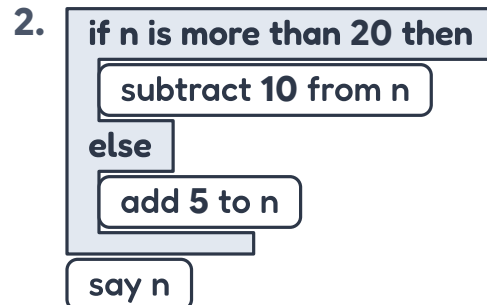
Shorter **A** **B**

If-Then Code

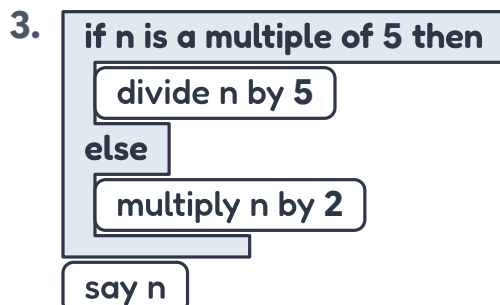
Run each number machine. Write the number that comes out.



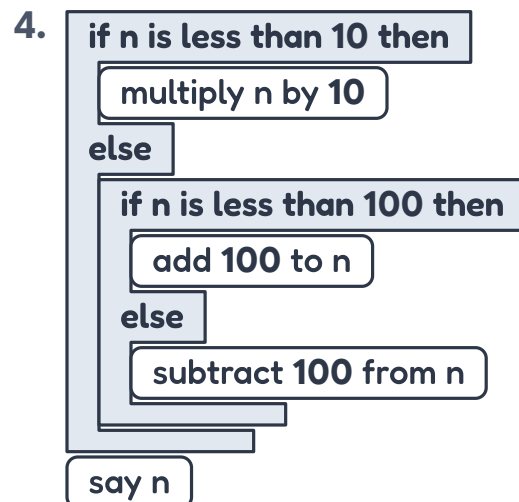
In	8	5	12	7	20
Out	4	16	6	22	10



In	25	14	20	31	9
Out	15	19	25	21	14



In	35	6	50	13	40
Out	7	12	10	26	8



In	7	45	150	10	99
Out	70	145	50	110	199

If-Then Code

Run the code for each number. Write the number in its box.

1.

if n is even then

put n in box A

else

if n is more than 50 then

put n in box B

else

put n in box C

Numbers

Example

64	17	83	30	51
9	76	45	98	50

Box A

Box B

Box C

64 30 76
98 50

83 51

17 9 45

2.

if n is more than 100 then

put n in box A

else

if n is a multiple of 10 then

put n in box B

else

put n in box C

Numbers

120	40	75	300	90
101	8	110	63	100

Swap the checks: ask about multiples of 10 first. Which numbers go to a different box?

120, 300, 110

Box A

Box B

Box C

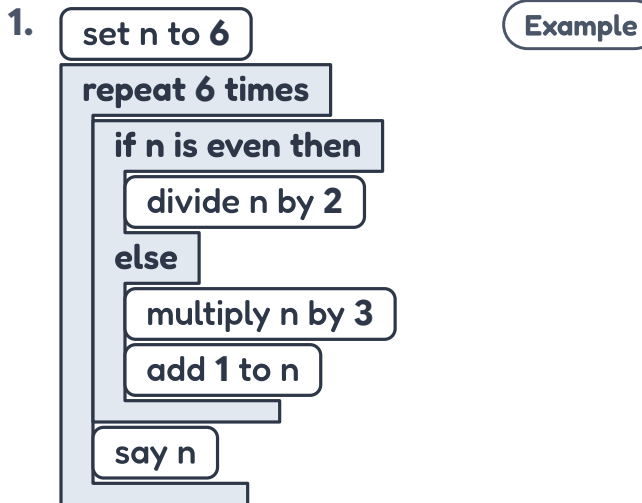
120 300 101
110

40 90 100

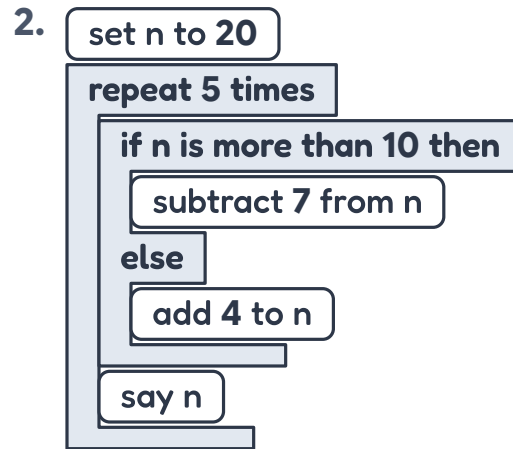
75 8 63

If-Then Code

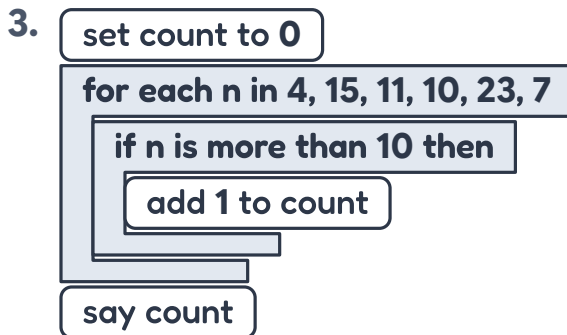
Run each program. Write what it says, in order.



It says 3 10 5 16 8 4



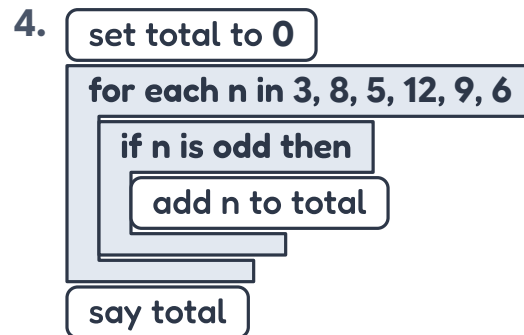
It says 13 6 10 14 7



It says 3

Change more than 10 to more than 9.

Now it says 4



It says 17

Change odd to even.

Now it says 26

If-Then Code

Run the code. Find the line with the bug and write the fix.

1. **Goal** Say the numbers 3, 6, 9, 12, 15.

```

1  set n to 3
2  repeat 4 times
3    say n
4    add 3 to n
  
```

It says 3, 6, 9, 12

Bug on line 2

Example

Fix repeat 5 times

2. **Goal** Halve even numbers. Add 1 to odd numbers.

```

1  if n is odd then
2    divide n by 2
3  else
4    add 1 to n
5  say n
  
```

For n = 8 it says 9

Bug on line 1

Fix if n is even then

3. **Goal** Say star for 50 or more, else dot.

```

1  if n is more than 50 then
2    say star
3  else
4    say dot
  
```

For n = 50 it says dot

Bug on line 1

Fix if n is 50 or more then (or more than 49)

4. **Goal** Count the numbers more than 10.

```

1  set count to 0
2  for each n in 4, 15, 11, 8, 20
3    if n is more than 10 then
4      add n to count
5  say count
  
```

It says 46

Bug on line 4

Fix add 1 to count

If-Then Code

Both programs do the same thing. Run them. Circle the shorter one.

1. **A** add 4 to n
add 4 to n
add 4 to n
say n

B add 12 to n
say n

For $n = 5$ Example

A says 17

B says 17

Shorter **A** **(B)**

2. **A** repeat 5 times
add 5 to n
say n

B repeat 3 times
add 5 to n
repeat 2 times
add 5 to n
say n

For $n = 3$

A says 28

B says 28

Shorter **(A)** **B**

3. **A** if n is more than 5 then
add 3 to n
else
add 3 to n
say n

B add 3 to n
say n

For $n = 8$

A says 11

B says 11

Shorter **A** **(B)**

4. **A** multiply n by 8
say n

B multiply n by 2
multiply n by 2
multiply n by 2
say n

For $n = 6$

A says 48

B says 48

Shorter **(A)** **B**