



0.4 Deciding

Name _____

Class _____

Date _____

What this lesson is about

if, else, comparisons, and a robot that looks with distance() before it moves.

- The distance sensor
- if and else
- Stopping at the right moment

Questions

7 marks in all

1. What does this program print?

[1 mark]

```
gap = 25
if gap > 30:
    print("plenty of room")
else:
    print("too close")
```

2. What does this program print?

[1 mark]

```
gap = 30
if gap > 30:
    print("go")
else:
    print("stop")
```

3. Which line asks whether gap is 15?

[1 mark]

- ☐ A if gap == 15:
- ☐ B if gap = 15:
- ☐ C if gap is equal 15:
- ☐ D if 15:

4. What does this program make the robot do?

[1 mark]

```
while distance() > 15:
    forward(40)
    wait(0.1)
stop()
```

- ☐ A Drive forward, looking as it goes, and stop once the gap is 15 cm or less
- ☐ B Drive exactly 15 cm and stop
- ☐ C Drive backwards away from the wall
- ☐ D Drive until it touches the wall

5. The same program runs with the robot already 10 cm from the wall. What happens?

[1 mark]

```
while distance() > 15:
    forward(40)
    wait(0.1)
stop()
```

- ☐ A The loop never runs, so the robot stops straight away without moving
- ☐ B It drives into the wall
- ☐ C It backs up to 15 cm
- ☐ D Python gives an error

6. `gap` is 20. Which of these tests are true?

[1 mark]

Tick every answer that is true.

- ☐ A `gap > 15`
- ☐ B `gap >= 20`
- ☐ C `gap != 20`
- ☐ D `gap < 20`
- ☐ E `gap == 20`

7. Which two symbols together mean "is not" in Python?

[1 mark]

The task: stop at the wall

Drive up to the wall and stop between 10 cm and 20 cm from it, without touching it. Look as you go, rather than guessing a distance.

```
from bugbot import *
connect()

while distance() > 40:
    forward(40)
    wait(0.1)

stop()
print("gap", distance())
```

Plan your program here, then type it in and press Run.



Do it on the robot

www.bugbotlab.com/learn/start-4-if/

The simulator checks it and tells you when it passes. Nothing to install, no account.

Challenges

1. Make the light red when the gap is under 20 cm and green when it is over.
2. Stop at 15 cm, back off 10 cm, and stop again.
3. Slow down as you get closer: speed 60 while the gap is over 40, speed 25 after that.