THE STRIVING

MUSLIM ACADEMY

Islamic and Academic Education

STAGE 6 · COMPUTING · SEQUENCE, SELECTION AND REPETITION

Sequence, selection and repetition

Programs to read, to fix and to write, all of them on paper, because reading one before you run it is the whole skill.

WHAT IS INSIDE

- Programs with a REPEAT
- Working out a variable
- How each one is worked

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2 sets · every answer worked line by line

Written for a parent teaching at home. No training assumed, and nothing else to buy.

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The instructions, and what they mean

This is the whole language. There is nothing else to remember.



EVERY INSTRUCTION

FORWARD 3	Move three squares the way you are facing.
RIGHT	Turn a quarter turn to the right. Do not move.
LEFT	Turn a quarter turn to the left. Do not move.
REPEAT 4 [...]	Do everything in the brackets four times.
SET score TO 0	Make a variable called score and put 0 in it.
ADD 5 TO score	Change what is in score by five.
IF score > 10 THEN ...	Do what comes after THEN, but only if score is more than 10.

An **algorithm** is the plan: the steps in order. A **program** is that plan written in a language a machine can follow. The same algorithm can be written as many different programs, which is why two correct answers to the same question can look nothing alike.

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Working out a variable

Draw the grid first.



1. What is score at the end of this program?

```
SET score TO 4
REPEAT 3 [
    ADD 4 TO score
]
IF score > 14 THEN ADD 10 TO score
```

Work out the REPEAT first. It adds the same amount each go.

2. What is score at the end of this program?

```
SET score TO 4
REPEAT 3 [
    ADD 5 TO score
]
IF score > 16 THEN ADD 10 TO score
```

Work out the REPEAT first. It adds the same amount each go.

3. What is score at the end of this program?

```
SET score TO 3
REPEAT 2 [
    ADD 2 TO score
]
IF score > 5 THEN ADD 10 TO score
```

Work out the REPEAT first. It adds the same amount each go.

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How each one is worked

Every answer here was produced by running the program, not by reading it. Where a question asks you to write a program, the answer shown is one correct answer and not the only one.



PROGRAMS WITH A REPEAT

1. The robot starts at (0, 0) facing north. Where does it finish?

1. The instructions inside the brackets happen 2 times.
2. Work through the REPEAT one go at a time. Do not try to see the whole thing at once.
3. After **]** the robot is at (-1, 1) facing south.
4. So it finishes at **(-1, 1) facing south**.

Answer: **(-1, 1) facing south**

2. The robot starts at (0, 0) facing north. Where does it finish?

1. The instructions inside the brackets happen 3 times.
2. Work through the REPEAT one go at a time. Do not try to see the whole thing at once.
3. After **]** the robot is at (3, 0) facing west.
4. So it finishes at **(3, 0) facing west**.

Answer: **(3, 0) facing west**

3. The robot starts at (0, 0) facing north. Where does it finish?

1. The instructions inside the brackets happen 3 times.
2. Work through the REPEAT one go at a time. Do not try to see the whole thing at once.
3. After **]** the robot is at (4, 0) facing west.
4. So it finishes at **(4, 0) facing west**.

Answer: **(4, 0) facing west**

4. The robot starts at (0, 0) facing north. Where does it finish?

1. The instructions inside the brackets happen 4 times.
2. Work through the REPEAT one go at a time. Do not try to see the whole thing at once.
3. After **]** the robot is at (0, 0) facing north.
4. So it finishes at **(0, 0) facing north**.

Answer: **(0, 0) facing north**

5. The robot starts at (0, 0) facing north. Where does it finish?

1. The instructions inside the brackets happen 4 times.
2. Work through the REPEAT one go at a time. Do not try to see the whole thing at once.
3. After **]** the robot is at (0, 0) facing north.
4. So it finishes at **(0, 0) facing north**.

Answer: **(0, 0) facing north**

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SAMPLE PAGES

You have read a few pages. The pack is longer.

What you are holding is a short sample, taken from different parts of the pack so that you can see how a week is planned and what a child is actually asked to do, before you decide.

The complete pack, and the rest of the academic materials, are on our website: schemes of work for a parent teaching at home, and practice packs for the skills children get stuck on.

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Islamic and Academic Education

Members of the homeschool community do not buy these. If you have joined the community, the pack for the term you are working on is given to you at no cost.

Our Islamic Education classes are free. These packs are part of what pays the teachers who teach them.