Unit 4 · Programming with Blocks

WORKSHEET

Full marks 35

Name _____ Class _____ Roll no. ____ Date _____ Marks _____ / 35

1 Key words [4]

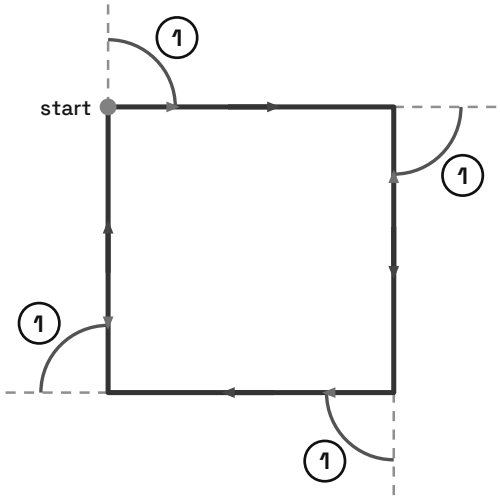
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

bug	debugging	decomposition	event	hardware	loop	nested loop	program	programming language	sequence

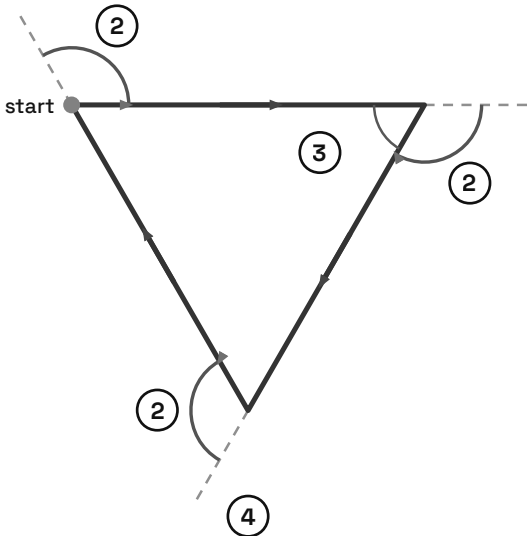
A _____ is an algorithm written in a _____, so that a computer can carry it out. Its blocks run in _____: one at a time, from the top down. A _____ runs the blocks inside it again and again, and a loop inside another loop is called a _____. Something that happens, such as a key being pressed, is an _____. A mistake in a program is a _____. Breaking a big job into smaller parts, each easy to program, is called _____.

2 Label the diagram [2]

The diagram shows the turtle drawing a square and a triangle with equal sides. Write what belongs in place of 1 to 4. The same number stands for the same answer. Each carries 0.5 mark.



4 turns × 90° = 360°



1. _____ 2. _____

3. _____ 4. _____

3 Multiple choice [5]

Choose the correct option for each of the following questions.

i. The turtle faces right. It runs **turn left 90 degrees** and then **move 50 steps.** Which way does it draw its line? [1]

a. right **b.** left
c. up **d.** down

ii. Which program draws a square? [1]

a. repeat 4 times: move 100 steps
b. repeat 4 times: turn right 90 degrees
c. repeat 4 times: move 100 steps, turn right 90 degrees
d. repeat 2 times: move 100 steps, turn right 90 degrees

iii. How far must the turtle turn at each corner to draw a regular pentagon (5 equal sides)? [1]

a. 60° **b.** 72°
c. 108° **d.** 120°

iv. A program is **repeat 5 times: repeat 3 times: move 50 steps.** How many times does the turtle move? [1]

a. 3 **b.** 5
c. 8 **d.** 15

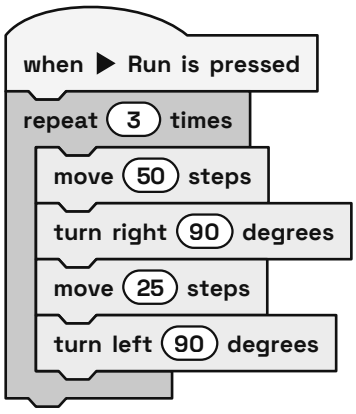
v. Which of these is an **event**? [1]

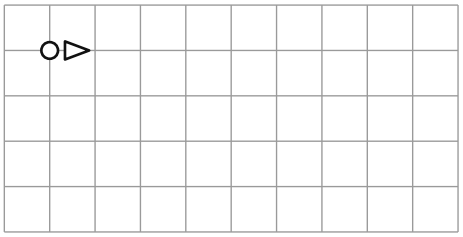
a. a move block **b.** someone pressing the space key
c. the number 90 **d.** a repeat block

4 Read the blocks [6]

The turtle starts at ○, facing the way the arrow points. Draw on the squared paper what each script makes. Draw an arrowhead where the turtle ends, pointing the way it faces.

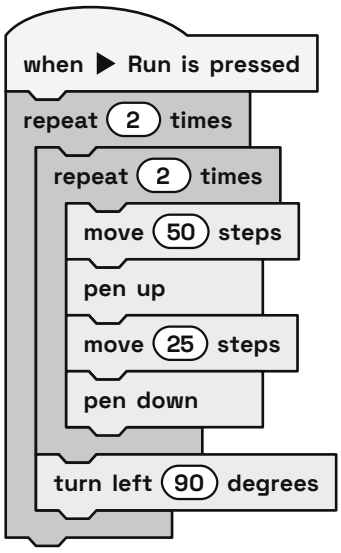
a. [3]

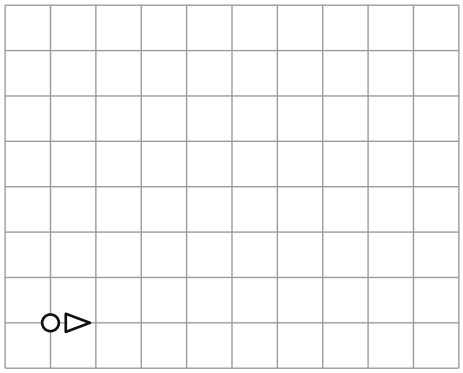




One square is 25 steps. ○ is where the turtle starts; the arrow shows the way it faces.

b. [3]



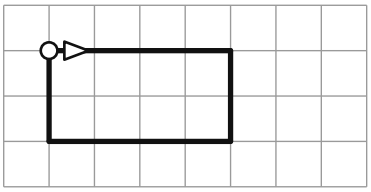


One square is 25 steps. ○ is where the turtle starts; the arrow shows the way it faces.

5 Write the blocks [5]

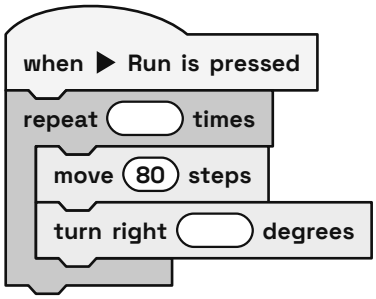
Write the blocks for each job. Write one block on each line, and put the blocks inside a loop a little to the right.

a. The turtle drew this shape, starting at ○ facing right. Write a script with a **repeat** block that draws it. [3]



One square is 25 steps. ○ is where the turtle starts; the arrow shows the way it faces.

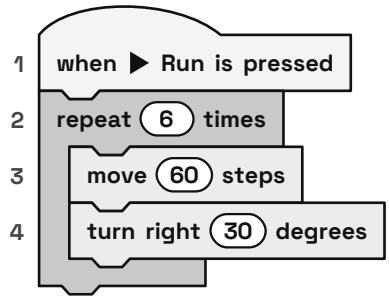
b. Fill in the two empty ovals so that the script draws a regular pentagon (5 equal sides) with sides 80 steps long. [2]



6 Find and fix the bug [3]

Read the script, then answer.

Bimala wants the turtle to draw a regular hexagon (6 equal sides). Her blocks are numbered on the left.



i. What does the turtle draw instead?
ii. Which block has the bug?
iii. Write the correct block.

7 Short answers [4]

Write short answers to the following questions.

a. Give two reasons why a loop is better than writing the same blocks again and again. [2]

b. Name two events that the programs in a mobile phone react to, and say what the phone does for each. [2]

8 Long answer [4]

Write a long answer to the following question.

You want the turtle to draw a house: a square with sides of 100 steps, and a triangle with equal sides of 100 steps on top of it as the roof. The turtle starts at the square's top-left corner, facing right.

i. Break the job into parts (decomposition).
ii. Write the blocks for the whole house.

9 Think [2]

Think, then answer.

A regular pentagon needs turns of 72°, but the five-pointed star **repeat 5 times: move 100 steps, turn right 144 degrees** turns twice as far at each point. How far does the turtle turn in all while drawing the star? Why does a star need that much more turning than a pentagon?

10 Activity: Be the turtle (not marked)

Do this in pairs, in the classroom or the playground, with no computer. One of you reads the blocks aloud, one block at a time; the other is the turtle and walks them: one move of 100 steps is 4 paces, and turn on the spot. Before each walk, draw what you think will happen. Then swap jobs.

Script	What I think it draws	What the turtle walked	Back at the start, facing the same way?
repeat 4 times: move 100 steps, turn right 90 degrees			
repeat 3 times: move 100 steps, turn right 120 degrees			
repeat 3 times: move 100 steps, turn right 60 degrees			
a script of your own			