

Name _____

Class _____

Date _____

By the end of this worksheet I can...

- ☐ draw flowcharts with start/stop, input, output, decision and loop symbols
- ☐ use fixed loops, continuous loops and conditional loops
- ☐ write programs using high, low, pause, if...then, for...next

I DO**Worked example** Read how a full-mark answer is built

A flowchart switches on an LED on output 2 when a switch on input 0 is pressed, waits 3 seconds, then switches it off, and repeats.

1 Write a program for the flowchart. (4 marks)**Points that earn marks** from the marking instructions: one ✓ per point

- ✓ main: label and if pin0 = 1 then (or input check loop)
- ✓ high 2
- ✓ pause 3000
- ✓ low 2 and goto main

WE DO**Guided practice** Use the starters and word bank to help you

A traffic light sequence must repeat 20 times then stop.

2 Describe how a fixed loop is used in the program. (2 marks)**Sentence starters**

First, ...
Next, ... using a ...

Word bank

program · sequence · surrounds · repeats

Tip: 2 marks = 2 separate, developed points.

YOU DO**On your own** No notes. Check your answers afterwards.**3 Quick check: tick one box for each.**

- a) In PBASIC, pause 2000 waits for...
☐ 2 ms ☐ 0.2 s ☐ 20 s ☐ 2 s
- b) Which symbol tests whether a switch is pressed?
☐ Parallelogram ☐ Diamond ☐ Rectangle ☐ Oval
- c) An advantage of a microcontroller over a hard-wired circuit is...
☐ It can be reprogrammed without changing the circuit ☐ It never needs a power supply to run ☐ It works without any input devices ☐ It is always faster than a hard-wired circuit
- d) Which is an advantage of a microcontroller over a hard-wired circuit?
☐ It needs no software to be written ☐ Fewer components, so more reliable ☐ It is always cheaper than any chip ☐ It never needs a driver for outputs

4 Key terms: write the letter of the matching description next to each term.

- | | | |
|---------------------------|-------|--|
| 1. Decision symbol | _____ | A Diamond with Y/N exits, used to test an input or a count. |
| 2. Output symbol | _____ | B Repeats a set number of times. |
| 3. Delay symbol | _____ | C Rectangle with a time and unit, e.g. "wait 2 s". |
| 4. Fixed loop | _____ | D Repeats forever. |
| 5. Continuous loop | _____ | E Parallelogram, e.g. "pin 7 on". |

*A flowchart uses different symbols.***5 Draw the flowchart symbol for a decision and for an output.** (2 marks)

6 Explain what is meant by 'pause 500 (PBASIC)'. (2 marks)

7 Describe the advantage of a microcontroller. (2 marks)

Check and reflect

Mark your answers with the answer sheet. Go back to the checklist on the site and re-rate each “I can” statement above. Which one still needs work?
