13. (continued)

(a) Explain fully how this program informs the farmer when a box of mushrooms is full. **3**

(b) The robot currently picks mushrooms that are no more than 4 cm in diameter and packs 20 mushrooms into a box.

(i) State the smallest size a picked mushroom could be. **1**

(ii) Explain why line 14 is necessary. **1**

[Turn over

13. (continued)

(c) The scanner on a second robot calculates how white each mushroom is and outputs this as a 'whiteness' reading between 0 and 10.

```
Line 1   DECLARE maxSize AS REAL INITIALLY 4.0
Line 2   DECLARE fullBox AS INTEGER INITIALLY 20
Line 3   DECLARE count AS INTEGER INITIALLY 0
Line 4   DECLARE whiteness AS REAL INITIALLY 0.0

Line 5   WHILE <there are more mushrooms to scan> DO
Line 6      RECEIVE mushroomSize FROM <scanner>

Line 7      IF mushroomSize >= maxSize/2 AND mushroomSize <=
              maxSize THEN

Line 8        <pick and pack scanned mushroom>
Line 9        SET count TO count + 1
Line 10       IF count = fullBox THEN
Line 11           SEND "Box Full" TO TOUCHSCREEN
Line 12           SEND "Replace with Empty Box" TO TOUCHSCREEN
Line 13           <pause until box replaced>
Line 14           SET count TO 0
Line 15       END IF

Line 16     END IF
Line 17  END WHILE
```

Line 4 of the original program has been edited.

Describe how else the original program could be edited so that mushrooms of any size, with a whiteness reading of at least 9 would be picked by the robot. **2**