10 **(a)** Jess runs on 5 days each week to prepare for a race.
In week 1, every run is 2 km.
In week 2, every run is 2.5 km.
In week 3, every run is 3 km.
Jess increases the distance of the run by 0.5 km every week.

(i) Find the week in which Jess runs 16 km on each of the 5 days. [2]

(ii) Find the total distance Jess will have run by the end of week 8. [3]

(b) Kyle also runs on 5 days each week to prepare for a race.
In week 1, every run is 2 km.
In week 2, every run is 2.5 km.
In week 3, every run is 3.125 km.
The distances he runs each week form a geometric progression.

(i) Find the common ratio of the geometric progression. [1]

(ii) Find the first week in which Kyle will run more than 16 km on each of the 5 days. [3]

(iii) Find the total distance Kyle will have run by the end of week 8. [3]

Question 11 is printed on the next page.