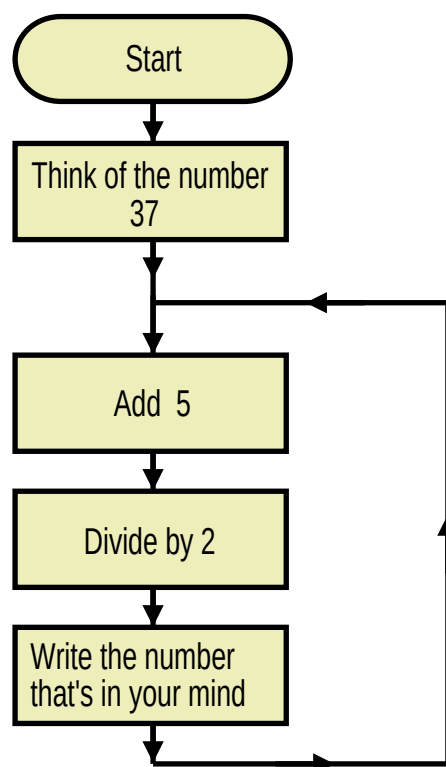


9.1 Test

Non-Calculator

Marks Available : 60

Question 1

A number sequence, U , is described by the following flowchart,Complete this table to show the first six terms in sequence U

U_1	U_2	U_3	U_4	U_5	U_6
37					

[7 marks]

Question 2

Simplify,

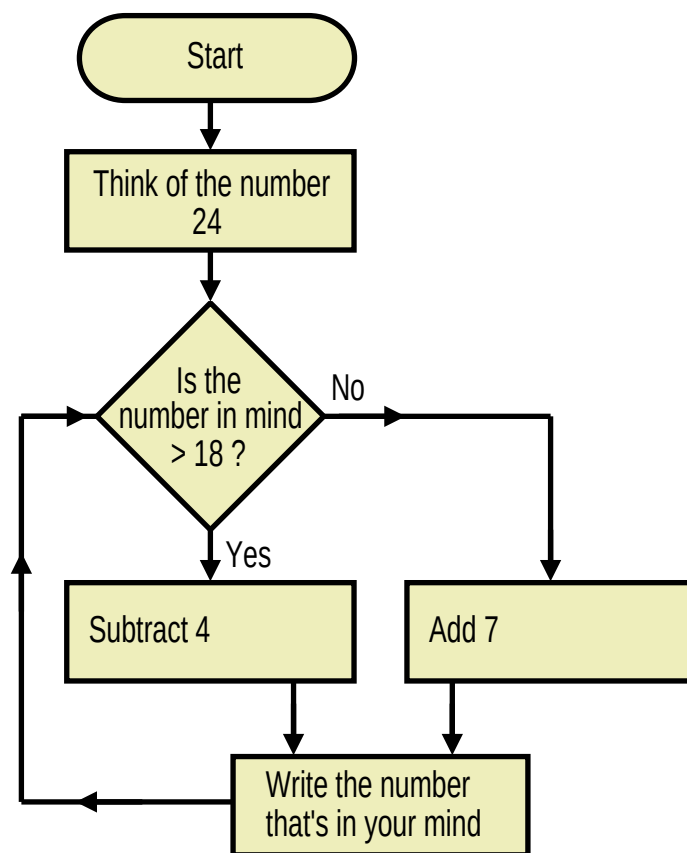
(i) $11 \times \left(\frac{5}{11} + 1 \right)$

(ii) $\left(6 + \frac{2}{5} \right) \times 5$

[4 marks]

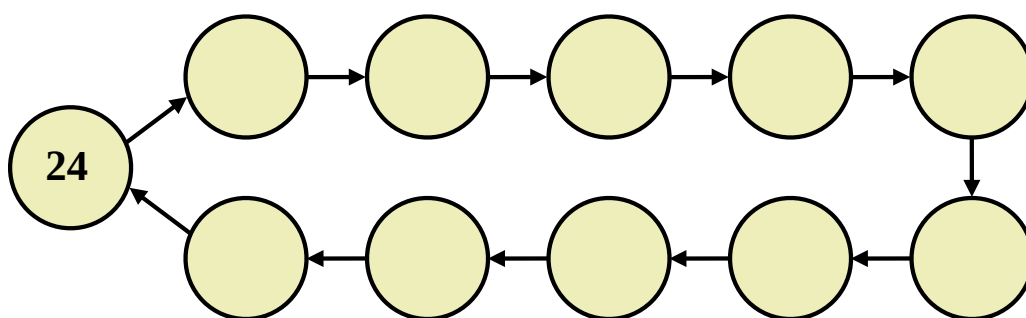
Question 3

A number sequence, K , is described by the following flowchart,



The flowchart generates a loop of numbers.

On the following diagram write out the numbers that are in the loop.



[8 marks]

Question 4

First expand the brackets, then simplify,

(i) $\left(2 + \frac{5}{6}\right) \times 6$

[2 marks]

(ii) $\frac{\left(4 + \frac{3}{7}\right)}{1} \times \frac{7}{7}$

[2 marks]

Question 5

A sequence of numbers has the iterative rule

$$A_1 = \frac{1}{8} \quad A_{n+1} = \frac{2}{3} A_n$$

Use the space below to work out the first six terms of this iterative sequence.

Simplify fractions where possible.

Put your answers in the table.

A_1	A_2	A_3	A_4	A_5	A_6

[7 marks]

Question 6

Simplify,

(i) $\frac{\left(\frac{3}{10} + 2 \right)}{5} \times \frac{10}{10}$

[2 marks]

(ii) $\frac{\left(4 + \frac{7}{5} \right)}{11}$

[2 marks]

(iii) $\frac{\left(8 + \frac{5}{3} \right)}{4}$

[2 marks]

Question 7

- (i) The following sum has an answer that is a rational number.

That is, a number in the form $\frac{p}{q}$ for integer p and q with $q \neq 0$

Determine what that rational number is.

$$\frac{\left(5 - \frac{3}{2}\right)}{2}$$

[2 marks]

- (ii) Consider the iteration, $B_1 = 1$, $B_{n+1} = \frac{5 - B_n}{2}$

Use the space below to work out the first six terms of this iterative sequence and put your answers in the table towards the bottom of the page.

B_1	B_2	B_3	B_4	B_5	B_6

[7 marks]

Question 8

Simplify,

(i) $\frac{1}{\left(\frac{5}{6} + 2\right)} \times \frac{6}{6}$

[2 marks]

(ii) $\frac{3}{\left(\frac{7}{9} + 2\right)}$

[2 marks]

(iii) $\frac{11}{\left(\frac{7}{3} - 1\right)}$

[2 marks]

Question 9

- (i) The following sum has an answer that is a rational number.

That is, a number in the form $\frac{p}{q}$ for integer p and q with $q \neq 0$

Determine what that rational number is.

$$\frac{1}{\left(2 + \frac{1}{3}\right)}$$

[2 marks]

- (ii) Consider the iteration, $Z_1 = -1$, $Z_{n+1} = \frac{1}{2 + Z_n}$

Use the space below to work out the first six terms of this iterative sequence and put your answers in the table towards the bottom of the page.

Z_1	Z_2	Z_3	Z_4	Z_5	Z_6

[7 marks]