Multiple-choice section

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Question | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Answer | D | A | C | B | A | B | A |

Question 1 [11.1]

D

4.5 = ,  = 6 =,  (repeating decimal) are all rational

Question 2 [11.1]

A

 is between  and , so  is between 4 and 5

Question 3 [11.2]

C

 = 

=  × 

= 2

Question 4 [11.2]

B

6 × 5

= 6 × 5 ×  × 

= 

Question 5 [11.2]

A

 =  × 

=  × 

=  × 

=  × 

= 

Question 6 [11.3]

B

Adding like terms:

7 – 3 = 4

Question 7 [11.4]

A

(5 + )(3 – )

= 15 – 5 + 3 – 2

= 13 – 2

Multiple-choice total marks: 7

Short answer section

Question 8 2 marks [11.1]

 is an example of a surd or an irrational number.

Question 9 4 marks [11.3]

 + 5

=  + 5

= 4**** + 5 × 9****

= 4**** + ****

= 49****

Question 10 4 marks [11.4]

2(3 + )  
= 2 × 3 + 2 × 

= 6**** + 2****

= 6 × 4 + 2

= 24 + 4****

Question 11 2 marks [11.1]

Answers will vary.

Examples: **** ≈ 10.05, **** ≈ 12.60

Hence 10 < **** < 15 and 10 < **** < 15.

Question 12 2 marks [11.2]

7 = **** × 

= ****

= ****

Question 13 3 marks [11.4]

A = ( + )2

= ()2 + 2 ×  ×  + ()2

= 10 + 2 + 6

= 16 + 2

= 16 + 2 × 2

= 16 + 4 cm2

Question 14 10 marks [11.5]

|  |  |
| --- | --- |
| (a)  = 5 = 5 | (b)  =  ×  =  =  = |
| (c)  –   =  ×  –  ×  =  =  = | (d)  +  =  ×  +  ×  =  +  =  +  = |

Short answer total marks: 27

Extended answer section

Question 15 8 marks [11.2, 11.4]

(a) Let length be 2x m and width is then x m. A = x × 2x  
120 = 2x2  
 x2 = 60  
  
Width = 2 m and length = 4 m

(b) P = 2(2 + 4) m =  m = 12 m

(c) Consider the rectangle made by the outside of the path.  
Outer length = 4 + 2 m Outer width = 2 + 2 m   
Outer area = ( + 2)( + 2) m2  
  
Inner (pool) area = 120 m2  


Question 16 8 marks [11.1, 11.2, 11.5]

(a) Using a calculator,  
(10 + ) ÷ (2 + ) ≈ 3.3 So three pieces can be cut.

(b) Left over length:  
10 +  – 3(2 + ) cm  
= 10 +  – 6 – 3 cm  
= 4 +  – 3 cm

(c) Fraction left over:  
  
=  ×   
=   
= 

Extended answer total marks: 16

TOTAL test marks: 50