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| *School Name*  *Mathematics Test 2017* | | | |
| Year 9 | | *Volume and SA of Prisms and Cylinders* | Non Calculator |
| **Skills and Knowledge Assessed:**   * Solve problems involving the surface area and volume of right prisms (ACMMG218) * Calculate the surface area and volume of cylinders and solve related problems (ACMMG217) * Solve problems involving surface area and volume for a range of prisms, cylinders and composite solids (ACMMG242) | | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 1** Short Answer Section | | | |
| Write all working and answers in the spaces provided on this test paper. | | | |
|  | What is the volume of the cube shown?  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | What is the volume of this rectangular prism?  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | Find the surface area of this rectangular prism.  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | What is the volume of this triangular prism?  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | The area of the cross section of this prism is 45 cm2.  What is the volume of the prism?  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | A prism has a volume of 2.5 m3.  What is its volume in cubic centimetres?  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |
|  | Find the surface area of the triangular prism.  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | What is the volume of the cylinder in terms of  ?  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | What is the volume of the solid shown?  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | The prism shown has a trapezium as its cross section.  What is its volume?  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | Calculate the surface area of the closed cylinder, using  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | The four timber beams shown all have a cross section measuring 45 mm by 150 mm.  The beams are all 3.6 metres long.  A cubic metre of the timber weighs 480 kg.  What is the weight of the 4 beams?    ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | The triangular prism shown is to be painted on all its faces, with a paint which covers 40 m2 per litre.  How much paint is needed?  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | The prism shown is a simplified version of a component for an aeroplane.  Its cross section is a kite with diagonals 1.2 m and 2.0 m and it is 0.5 m thick.  A cubic metre of the alloy from which it will be made has a mass of 1200 kg.  What is the mass of the component?  ………………………………………………  ……………………………………………....  ………………………………………………  ………………………………………………. | | |
|  | A square prism has dimensions *x* cm, *x* cm and 3*x* cm.  With two slices, it is cut into three identical cubes as shown.    The surface area of the three cubes is greater than that of the original prism.  What is the percentage increase in surface area? (Answer correct to 1 decimal place.)  ……………………………………………………………………………………………....  ……………………………………………………………………………………………….  ……………………………………………………………………………………………....  ………………………………………………………………………………………………. | | |

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| *School Name*  *Mathematics Test 2017* | | | |
| Year 9 | | *Volume and SA of Prisms and Cylinders* | Calculator Allowed |
| Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 2** Multiple Choice Section | | | |
| Mark all your answers on the accompanying multiple choice answer sheet, not on this test paper. You may do any working out on this test paper. Calculators are allowed for this section. | | | |
|  | What is the volume of this square prism?  A. 320 cm2  B. 480 cm2  C. 640 cm2  D. 1280 cm2 | | |
|  | What is the surface area of this rectangular prism?  A. 0.72 m2  B. 2.74 m2  C. 5.48 m2  D. 8.64 m2 | | |
|  | Calculate the surface area of this cube, correct to the nearest square centimetre.    A. 33 cm2  B. 34 cm2  C. 35 cm2  D. 38 cm2 | | |
|  | What is the volume of this triangular prism?  A. 5 000 cm3  B. 7 500 cm3  C. 10 000 cm3  D. 20 000 cm3 | | |
|  | This rectangular prism has a volume of 3000 m2.  What is its height (*x* cm)?  A. 20 cm  B. 25 cm  C. 30 cm  D. 50 cm | | |
|  | A cube has a surface area of 13.5 cm2.  What is its side length?  A. 1.25 cm B. 1.5 cm C. 2.25 cm D. 2.5 cm | | |
|  | This prism is made by joining 1 centimetre cubes together.  What is the volume of the prism?  A. 22 cm3  B. 35 cm3  C. 40 cm3  D. 45 cm3 | | |
|  | The cross section of this prism is a rhombus.  What is its volume?  A. 1080 cm3  B. 1416 cm3  C. 1620 cm3  D. 2160 cm3 | | |
|  | Find the volume of the cylinder shown.  A. 1005 cm3  B. 1508 cm3  C. 2011 cm3  D. 4021 cm3 | | |
|  | Find the surface area of the triangular prism whose net is shown.    A. 940 cm2  B. 1060 cm2  C. 1120 cm2  D. 1200 cm2 | | |
|  | This prism has a parallelogram as its cross section.  What is its surface area?  A. 880 cm2  B. 940 cm2  C. 1010 cm2  D. 1140 cm2 | | |
|  | Calculate the volume of the prism shown.  A. 1120 cm3  B. 1200 cm3  C. 1440 cm3  D. 2400 cm3 | | |
|  | A water trough for sheep is in the shape of half a cylinder with diameter 40 cm and length 4.2 metres.  What volume of water will the trough hold?  A. 0.13 m3  B. 0.26 m3  C. 0.52 m3  D. 1.06 m3 | | |
|  | Calculate the surface area of the prism shown.  A. 6720 cm2  B. 7200 cm2  C. 8040 cm2  D. 8880 cm2 | | |
|  | Find the cross section of this prism is made up of a semicircle and a triangle.  Find the volume of the prism.  A. 9048 cm3  B. 16 405 cm3  C. 18 306 cm3  D. 19 526 cm3 | | |

*School Name*

*Mathematics 2017*

*Multiple Choice Answer Sheet*

*Volume and SA of Prisms and Cylinders*

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

11. A B C D

12. A B C D

13. A B C D

14. A B C D

15. A B C D

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| *School Name*  *Mathematics Test 2017* | | |
| Year 9 | *Volume and SA of Prisms and Cylinders* | Non Calculator Section |

ANSWERS

| Question | Working and Answer |
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| *School Name*  *Mathematics Test 2017* | | |
| Year 9 | *Volume and SA of Prisms and Cylinders* | Calculator Allowed  Multiple Choice  Section |

ANSWERS

|  |  |  |
| --- | --- | --- |
| Question | Working | M C Answer |
|  |  | **D** |
|  |  | **C** |
|  |  | **A** |
|  |  | **C** |
|  |  | **B** |
|  |  | **B** |
|  |  | **B** |
|  |  | **A** |
|  |  | **D** |
|  |  | **C** |
|  |  | **D** |
|  |  | **A** |
|  |  | **B** |
|  |  | **A** |
|  |  | **C** |

*School Name*

*Mathematics 2017*

*Multiple Choice Answer Sheet*

*Volume and SA of Prisms and Cylinders*

Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Completely fill the response oval representing the most correct answer.

1. A B C D

2. A B C D

3. A B C D

4. A B C D

5. A B C D

6. A B C D

7. A B C D

8. A B C D

9. A B C D

10. A B C D

11. A B C D

12. A B C D

13. A B C D

14. A B C D

15. A B C D