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| Year  9 | | *Surface Area and Volume of Prisms* | Calculator Allowed |
| **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 surface area of this carton which is used to deliver new Pineapple Computers?  ……………………………………………  ……………………………………………  ……………………………………………  …………………………………………… | | |
|  | An MIB computer is shipped in the carton shown. The computer itself takes up 60% of the volume of the carton, with the rest being packing material. What volume of packing material is used in the carton?  ……………………………………………  ……………………………………………  …………………………………………… | | |
|  | What is the volume of the triangular prism shown?  ……………………………………………  ……………………………………………  …………………………………………… | | |
|  | What is the surface area of the prism shown?  ………………………………………………  ……………………………………………….  ………………………………………………  ………………………………………………. | | |
|  | A prism has, as its base, an irregular polygon with area 136 cm2. What is the volume of the prism?  ………………………………………………  ……………………………………………….  ………………………………………………. | | |
|  | A haystack is in the shape of a trapezoidal prism as shown.  What volume of hay is held in the haystack?  ……………………………………………  …………………………………………….  ……………………………………………. | | |
|  | The packet for Peppa mints is a plastic prism with its cross section in the shape of a kite as shown.  What area of plastic is needed for the packet?  ………………………………………………  ……………………………………………….  ……………………………………………… | | |
|  | The cylinder of cheese shown is coated in wax on all of its faces. What is the area of wax that was used?  ………………………………………………  ……………………………………………….  ……………………………………………… | | |
|  | What is the volume of the cylinder shown?  ……………………………………………  …………………………………………….  …………………………………………… | | |
|  | Find the volume of the prism shown.  ……………………………………………  …………………………………………….  ……………………………………………  ……………………………………………. | | |

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| Year  9 | | *Surface Area and Volume of Prisms* | 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. | | | |
|  | Terracotta bricks are in the shape of rectangular prisms measuring 12 cm by 15 cm by 20 cm. A wall is built using 2 000 of these bricks. What is the volume of the bricks that make up the wall?  A. 0.72 m3 B. 7.2 m3 C. 72 m3 D. 720 m3 | | |
|  | A loaf of bread has cross sectional area 288 cm2 and length 35 cm. It is sliced into 40 even slices.  What is the volume of one of the slices?  A. 252 cm3 B. 283 cm3  C. 288 cm3 D. 300 cm3 | | |
|  | A fridge magnet for Turtle Island is in the shape of the island and is 0.4 cm thick.  The magnet is made of plastic and the area of the face is 12.5 cm2.  What volume of plastic is needed to make 500 of these magnets?  A. 100 cm3  B. 500 cm3  C. 2 500 cm3  D. 5 000 cm3 | | |
|  | What is the volume of this triangular prism?   1. 640 cm3 2. 800 cm3 3. 1 600 m3 4. 2 400 cm3 | | |
|  | What is the volume of the cylindrical water tank shown?  A. 8.6 m3  B. 24.4 m3  C. 97.7 m3  D. 390.9 m3 | | |
|  | What is the surface area of the rectangular prism shown?  A. 14 600 cm2  B. 29 200 cm2  C. 120 000 cm2  D. 240 000 cm2 | | |
|  | What is the surface area of the triangular prism shown?  A. 480 m3  B. 1 180 m3  C. 1 200 m3  D. 1 440 m3 | | |
|  | A jug for fruit juice is a cylinder with radius 8cm and height 15 cm.  The matching glasses are cylinders with radius 3 cm and height 12 cm.  How many glasses could be filled from the jug?    A. Two and a bit glasses.  B. Four and a half glasses.  C. Exactly eight glasses.  D. Almost nine glasses. | | |
|  | A roll of fencing wire is cylindrical, with the dimensions shown.  It is to be surrounded completely in a plastic protective wrapping.  What area of plastic is needed to do this?  A. 0.20 m2 B. 2.00 m2  C. 2.13 m2 D. 2.26 m2 | | |
|  | A solid polystyrene foam model of a house is to be constructed for a stage play.  What volume of foam is needed for the model?  A. 1.408 m3 B. 1.664 m3  C. 35.20 m3 D. 70.40 m3 | | |

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| Year  9 | *Surface Area and Volume of Prisms* | Calculator Allowed |
|  | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **Section 3** Longer Answer Section | | |
| Write all working and answers in the spaces provided on this test paper. | | |

|  | | **Marks** |
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|  | A glasshouse for raising seedlings has a concrete floor and all other faces are made of glass, including the door. |  |
|  | 1. The concrete floor is 0.3 m thick. What volume of concrete is needed for the floor?   ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | **1** |
|  | 1. What area of glass is needed for the glasshouse (including the door)?   ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | **2** |
|  | 1. The air in the glass house is circulated by a fan which moves 3 cubic metres per minute. How long would it take (theoretically) to circulate all the air in the glasshouse?   ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | **2** |
|  | A gas pipeline is to be constructed from sections of the size shown. |  |
|  | 1. If the pipeline between two towns is to be 100 km long, how many sections of pipe will be needed?   ………………………………………………………………………………………………. | **1** |
|  | 1. What volume of gas will be held in the pipe between the two towns?   ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | **2** |
|  | 1. The outside of the pipeline between the two towns is to be painted with a rust protective paint. What area will need to be painted?   ……………………………………………………………………………………………….  ………………………………………………………………………………………………. | **2** |

*Multiple Choice Answer Sheet*

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

*Surface Area and Volume of Prisms*

ANSWERS

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| Section 1 | |
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| Section 2 | |
|  | B |
|  | A |
|  | C |
|  | B |
|  | B |
|  | B |
|  | D |
|  | D |
|  | D |
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| Section 3 | |
|  | a) |
|  | b) |
|  | c) |
|  | a) |
|  | b) |
|  | c) |

*Multiple Choice Answer Sheet*

Name Marking Sheet

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