**Sample Answer Key**

**PART II Show all workings**

**Total Value: 35 marks**

value

4 36. The composite figure is made from a cylinder and square-based prism. What is the total surface area of the figure, including the bottom?

Surface Area of a Cylinder = $2πr^{2}+2πrh$

**OR** $2πr^{2}+πdh$

**Cylinder 1 mark**

$$2\left(3.14\right)\left(2.5\right)^{2}+\left(3.14\right)\left(5\right)\left(18.5\right)$$

$$=329.7m^{2}$$

**Prism 1.5 marks**

Top/Bottom

$$2\left(20.9^{2}\right)=873.62m^{2}$$

Left Side/Right Side

$$2\left(20.9)(4.2\right)=175.56m^{2}$$

Front/Back

$$2\left(20.9)(4.2\right)=175.56m^{2}$$

**Total**

$$873.62m^{2}+2\left(175.56m^{2}\right)$$

$=1224.74m^{2}$

**Area of Overlap 0.5 mark**

$$2\left(3.14\right)\left(2.5\right)^{2}$$

$$=39.25m^{2}$$

**Total Surface Area 1 mark**

$$1224.74+329.7-39.25 =1515.19 m^{2}$$

**Note:** Some students may readily see that there is no need to find the top and bottom of the cylinder as 2 circles cancel out the overlap.

3 37. Simplify using the laws of exponents and then evaluate:

$$\frac{3^{7}×\left(2^{3}\right)^{2}×3^{2}}{3^{9}×2}$$

$\frac{3^{7}×2^{6}×3^{2}}{3^{9}×2}$ 1 mark

$\frac{3^{9} × 2^{6}}{3^{9} × 2}$ 0.5 mark

$2^{5}$ 1 mark

$32$ 0.5 mark

3 38. Evaluate: $\left(1\frac{1}{3}×\frac{-5}{12}\right)÷\left(-\frac{4}{9}\right)$ Show all workings in fractional form.

|  |
| --- |
| $\left(\frac{4}{3}×\frac{-5}{12}\right)÷\left(-\frac{4}{9}\right)$ 1 mark $=\frac{-5}{9}÷\frac{-4}{9}$ 1 mark$=\frac{-5}{9}×\frac{9}{-4}$ $=\frac{5}{4} or 1\frac{1}{4}$ 1 mark |

3 39. Evaluate: $\frac{1.072 - 3.6 ÷ (-1.8)}{(1.5 - 4.7)^{2}}$ Show all steps.

|  |
| --- |
| $=\frac{1.072 + 2}{\left(-3.2\right)^{2}}$ 1 mark$=\frac{3.072}{10.24}$ 1 mark$=0.3$ 1 mark |

2 40. Complete the table and graph $2x+y=6$



|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |
| --- | --- |
| $$x$$ | $$y$$ |
| **-2** | 10 |
| **-1** | 8 |
| **0** | 6 |
| **1** | 4 |
| **2** | 2 |

 |  |

41. An amusement park charges an entry fee of $10 and $2 per ride.

1 A) Complete the table

|  |  |
| --- | --- |
| **# Rides (*R*)** | **Cost ($)****(*C*)** |
| **0** | **10** |
| **1** | **12** |
| **2** | **14** |
| **3** | **16** |
| **4** | **18** |
| **5** | **20** |

1 B) Write the equation that relates the cost (***C***) to the number of rides (***R***).

 $C=2R+10$

1 C) How many rides can a person go on if they have $26? Justify your answer.

 8 Rides Students might extend the table, construct graph, or use inspection

1 D) Is this an example of continuous or discrete data. Explain your answer.

This is **Discrete Data** because a person cannot go on a part of a ride.

3 42. Determine the algebraic expression that represents the shaded region. Simplify your answer.

$$Area\_{shaded region}=Area\_{triangle}-Area\_{rectangle}$$

$\left[\frac{\left(6x-4\right)\left(4x\right)}{2}\right]-\left[\left(3x+2\right)\left(x\right)\right]$ 1 mark

$=\left[\frac{24x^{2}-16x}{2}\right]-\left[3x^{2}+2x\right]$

$=\left(12x^{2}-8x\right)-\left(3x^{2}+2x\right)$ 1 mark

$=9x^{2}-10x$ 1 mark

43. Debbie incorrectly solved the following problem:

 $4\left(x-5\right)=28$

 Step 1 $4x-5=28$

 Step 2 $4x-5+5=28+5$

 Step 3 $ 4x=33$

 Step 4 $ \frac{4x}{4}=\frac{33}{4}$

 Step 5 $ x= \frac{33}{4}$

1 a) In which step did Debbie’s error occur?

The error occurred in Step \_\_\_\_\_\_\_1\_\_\_\_\_\_\_\_

Explanation: Debbie did not apply the distributive property correctly in Step 1. She did

 not multiply the 4 by the second term of the binomial.

1 b) Solve the equation correctly.

$$4\left(x-5\right)=28$$

$$4x-20=28$$

$$4x-20+20=28+20$$

$$ 4x=48$$

$$ \frac{4x}{4}=\frac{48}{4}$$

$$ x=12$$

**OR** $ 4\left(x-5\right)=28$

$$x-5=7$$

$$ x=12$$

 44. John downloads apps from two online stores. The rate plans are shown in the table.

|  |  |  |
| --- | --- | --- |
|  | **iApps** | **Galaxy Apps** |
| Membership fee | $$\$20$$ | $$\$30$$ |
| Cost per app | $$\$1.25$$ | $$\$0.75$$ |
| Expression | $$20+1.25x$$ | $$30+0.75x$$ |

3 Write and solve an inequality to determine when the number of iApp downloads costs more than Galaxy Apps downloads.

 1 mark$ 20+1.25x>30+0.75x$

$$1.25x-0.75x>30-20$$

$$ 0.50x>10$$

$$ \frac{0.50x}{0.50}>\frac{10}{0.50}$$

 1 mark$ n>20$

\*\*\*\*After 20 downloads, iApps will cost more. 1 mark

2 45. Draw a reduction of the figure using a scale factor of $\frac{3}{4}$?





3 46. Both triangles are similar. How long is the bridge?

Let $x$ = length of bridge

$\frac{x}{12.6}=\frac{45.5}{15.7}$ 1 mark

$15.7x=573.3$

$\frac{15.7x}{15.7}=\frac{573.3}{15.7}$ 1 mark

$x≅36.5 m$ 1 mark

The bridge is $36.5$ metres long.

3 47. Point $O$ is the centre of a circle with radius of $7 cm$. If $PQ=16 cm$, what is the length of tangent $RQ$, to the nearest tenth?

* Indicate that a tangent and radius at point of tangency is a perpendicular bisector or forms a right angle.

**[0.5 mark]**

* Finding the value of RQ

$x^{2}+7^{2}=23^{2}$ 0.5 mark

$x^{2}=23^{2}-7^{2}$ 0.5 mark

$x^{2}=529-49$ 0.5 mark

$x^{2}=480$ 0.5 mark

$x=\sqrt{480}$

$x≅21.9cm$ 0.5 mark

If the hypotenuse is marked as 16 cm rather than 23 cm, deduct 0.5 marks.

**Grade 9 Math Multiple Choice Answer Sheet**

**(This sheet may be removed from the exam paper.)**

**Teacher: Answer Key Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

|  |
| --- |
| 1. C |
| 2. B |
| 3. A |
| 4. C |
| 5. C |
| 6. D |
| 7. B |
| 8. A |
| 9. C |
| 10. C |
| 11. B |
| 12. B |
| 13. B |
| 14. B |
| 15. C |
| 16. B |
| 17. C |
| 18. B |
| 19. C |
| 20. B |

|  |
| --- |
| 21. A |
| 22. C |
| 23. B |
| 24. B |
| 25. B |
| 26. B |
| 27. B |
| 28. C |
| 29. B |
| 30. A |
| 31. B |
| 32. D |
| 33. C |
| 34. C |
| 35. B |