higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

GENERAL EDUCATION AND TRAINING CERTIFICATE

NQF LEVEL 1

AET LEVEL 4 SITE-BASED ASSESSMENT

LEARNING AREA : MATHEMATICS AND MATHEMATICAL SCIENCES

CODE : MMSC4

TOOL : INVESTIGATION

TIME : 3 HOURS

MARKS : 50

This assessment tool consists of 4 pages.

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INSTRUCTIONS AND INFORMATION FOR THE TEACHER

1. This investigation is based on Unit standard ID 7464 and can be given while the Unit standard title is taught.
   NB: AET facilitators must thoroughly deal with concepts of measurement in detail as this is relevant to the daily life's situations of learners.

Activity 1: Cube Tank

	1.1.1	Square ✓A	Correct answer	(1)
	1.1.2	$0{,}85\ m + 0{,}85\ m$ ✓A $= 1{,}7m$ ✓A	Correct addition Correct answer	(2)
	1.1.3	Area = $1{,}7m \times 1{,}7m$ ✓CA $= 2{,}89m^2$ ✓A	Correct substitution Correct answer	(2)
	1.2.1	$Volume = 1{,}7m \times 1{,}7m \times 1{,}7m$ ✓CA $= 4{,}913m^3$ ✓✓A **Or** Volume $(1{,}7\ m)^3$ ✓CA $= 4{,}913\ m^3$ ✓✓A	Correct substitution Correct answer Correct units ($m^{3)}$	(3)
	1.2.2	$4{,}913\ m^3 = 4{,}913 \times 1\ 000\ 000\ ml$ ✓CA $= 4\ 913\ 000\ ml$ ✓A $= 4\ 913\ l$ ✓A	Correct conversion Correct ml Correct l	(3)
	1.2.3	Recommended capacity $= \frac{99{,}74}{100} \times 4913\ l$ ✓✓ $= 4900{,}2262\ l$ $= 4900\ l$ ✓A	Correct multiplication of percentage and capacity of the tank Correct rounding of answer	(3)
	1.3.1	6×4 ✓A =24 panels ✓A	Correct multiplication Correct answer **Full marks for answer only**	(2)
	1.3.2	Area of a panel $= 0{,}85m \times 0{,}85m$ ✓A $= 0{,}7225\ m^2$ ✓A TSA $= 24\ panels \times 0{,}7225\ m^2$ $= 17{,}34\ m^2$ ✓A	Correct area of a panel Correct multiplication Correct answer	(3) **[19]**

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Activity 2 : A cylindrical water tank

	2.1.1	$4{,}9\ \text{k}l = 4900\ l$ ✓A	Correct changing of kl into l	(1)
	2.1.2	$4900\ l = \frac{4900\ l}{1000\ l} \times 1m^3$ ✓A $= 4{,}9\ m^3$ ✓A	Correct conversion Correct answer	(2)
	2.1.3	$4{,}9\ m^3 = Area\ of\ the\ floor \times 1{,}75\ m$ ✓CA $\frac{4{,}9\ m^3}{1{,}75\ m} = Area\ of\ the\ floor$ $\therefore Area\ of\ the\ floor = 2{,}8\ m^2$ ✓A	Correct substitution Correct answer	(2)
	2.1.4	$2{,}8\ m^2 = 3{,}14 \times r^2$ ✓CA $r^2 = \frac{2{,}8}{3{,}14}$ ✓A $r = \sqrt{0.89\ m^2}$ $\therefore r = 0{,}94\ m$ ✓A	Correct substitution Correct r^2 Correct answer	(3)
	2.1.5	Circumference $= 2 \times 3{,}14 \times 0{,}94\ m$ ✓ $= 5{,}9\ m$ ✓	Correct substitution Correct answer	(2)
	2.2.1	Area = circumference × height $= 5{,}9\ m \times 1{,}75\ m$ ✓ $= 10,33\ m^2$ ✓ **Or** Area $= 2 \times 3{,}14 \times 0{,}94\ m \times 1{,}75\ m$ ✓ $= 10{,}33\ m^2$ ✓	Correct substitution Correct answer	(2)
	2.2.2	Area $= 0{,}9\ m \times 0{,}5\ m$ ✓ $= 0{,}45\ m^2$ ✓	Correct substitution Correct answer	(2)
	2.2.3	Number of panels$= \frac{10{,}33m^2}{0{,}45m^2}$ ✓CA $= 22{,}96$ $= 23$ panels ✓A	Correct substitution Correct answer	(2)
	2.3.1	$= \frac{1}{3} \times 3{,}14 \times (0{,}94)^2 \times 0{,}3$ ✓A $= 0{,}2775\ m^3$ $= 0{,}28\ m^3$ ✓A	Correct substitution Correct answer	(2)
	2.3.2	$= 0{,}28\ m^3 \times 1000\ l$ ✓CA $= 280\ l$ ✓A	Correct conversion Correct answer	(2)
	2.3.3	TSA $= 0{,}9\ m^2 + 10{,}33\ m^2 + 2{,}8\ m^2$ ✓CA $= 14{,}03\ m^2$ ✓A	Correct addition Correct answer	(2) **[22]**

Activity 3 : The conclusion

	3.1.1	Cost of cube tank $= 17{,}34\ m^2 \times R970.90$ ✓ $= R16\ 835{,}41$ ✓ Cost of cylindrical tank $= 14{,}03\ m^2 \times R1199{,}96$ ✓ $= R16\ 835{,}44$ ✓	Correct manipulation Correct cost of cube tank Correct manipulation Correct cost of cylindrical tank	(4)

	3.1.2	Maximum volume of cube tank$= 4913\ l$ Maximum volume of cylindrical tank $= 4900\ l + 280\ l = 5180\ l$ ✓ ∴ the cylindrical tank offers the best value for money, because it has the biggest maximum volume and the least surface area whiles costing almost the same as cube tank ✓✓	1 mark for correct choice 2 marks for any relevant reason	(3)

	3.1.3	• Fixing leaking pipes ✓ • Watering the gardens at sunset ✓ • Harvesting rain water Planting drought resistant plants	Any relevant reason	(2)

TOTAL: 50

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