Assessment Schedule – 2007

Mathematics: Solve right-angled triangle problems (90152)

Evidence Statement

	Assessment Criteria	Q. No.	Evidence	Code	Judgement	Sufficiency
ACHIEVEMENT	Solve right-angled triangle problems	1	WL $= \sqrt{3.2^2 - 1.1^2} = 3.00499584 = 3.0$m	AP	Accept any level of rounding or truncation.	**Achievement:** 3 × code **A** Must have at least one AP **and** at least one AT.
		2a	AJ $= \sqrt{2.2^2 + 3^2} = 3.720215048$m $= 3.7$ m	AP		
		2b	$\angle FGH = \sin^{-1}\frac{4.4}{6.2} = 45.2 \approx 45^\circ$	AT	Evidence of BOTH trigonometry AND Pythagoras being used is required.	
		2c	$EB = 3\tan 22^\circ = 1.21... \approx$ 1.2 m	AT		
ACHIEVEMENT WITH MERIT	Solve problems in practical situations involving right-angled triangles.	2d	$\cos 35° = \frac{4.1}{GA}$ GA = 4.1 ÷ cos 35 = 5.005175814 = 5.0 m	AT / M	Accept any level of rounding or truncation.	Achievement **plus** 3 × code **M** OR **3 × code M** with at least one evidence of Pythagoras **and** at least one evidence of trigonometry.
		3	$\angle DCA = \tan^{-1}\frac{2}{3.236}$ $= 31.71801267^\circ$ $= 31.7°$	AT / M	A correct mathematical statement will be expected in each question, along with evidence of use of trigonometry and/or Pythagoras.	
		4	290 – 218 = 72 so vertical change $= \sqrt{78^2 - 72^2} = 30$ m Grid reference for end of tunnel = 290409	AP / M	Penalise IMS the first time it occurs. Must be a whole number grid reference.	
ACHIEVEMENT WITH EXCELLENCE	Solve problems in word or 3D situations	5	Using ΔABC, AB = 400cos15° = 386.37 m and BC = 400sin15° = 103.53 m Hence EF = 333 – BC = 229.47 m Using ΔEFC, CE $= \sqrt{400^2 - 229.47^2} = 327.63$ m Hence BD = 327.63 m Using ΔABD, AD $= \sqrt{AB^2 + BD^2} = 506.58$ m Using ΔADF, where DF = 883 – 550 = 333 m required range $= \sqrt{\mathbf{AD}^2 + 333^2}$ = 606.23 m This exceeds the maximum range of the Walkie-talkies, hence they are not going to be suitable here.	AT AT AP/M E	Finding AB or BC correctly can be used as replacement evidence for code AT Finding CE (or BD) correctly can be used as replacement evidence for code M. Calculations must support the conclusion. Accept one minor error and/or one IMS	Achievement with Merit **plus** code **E**

Judgement Statement

Achievement	Achievement with Merit	Achievement with Excellence
Solve right-angled triangle problems. 3 × A (including at least one of AP and one of AT)	Solve problems in practical situations involving right-angled triangles. **Achievement** *plus* 3 × M *or* 3 × M with at least one evidence of Pythagoras **and** at least one evidence of trigonometry.	*Solve problems in word or 3D situations.* **Merit** *plus* 1 × E

The following Mathematics-specific marking conventions may also have been used when marking this paper:

- Errors are circled.
- Omissions are indicated by a caret (^).
- **NS** may have been used when there was not sufficient evidence to award a grade.
- **CON** may have been used to indicate 'consistency' where an answer is obtained using a prior, but incorrect answer and **NC** if the answer is not consistent with wrong working.
- **CAO** is used when the 'correct answer only' is given and the assessment schedule indicates that more evidence was required.
- # may have been used when a correct answer is obtained but then further (unnecessary) working results in an incorrect final answer being offered.
- **RAWW** indicates right answer, wrong working.
- **R** for 'rounding error' and **PR** for 'premature rounding' resulting in a significant round-off error in the answer (if the question required evidence for rounding).
- **U** for incorrect or omitted units (if the question required evidence for units).
- **MEI** may have been used to indicate where a minor error has been made and ignored.