

Numeracy 2018 v1.1

IA2A sample marking scheme

October 2018

Examination — short response

This sample has been compiled by the QCAA to assist and support teachers to match evidence in student responses to the characteristics described in the instrument-specific standards.

Assessment objectives

This assessment instrument is used to determine student achievement in the following objectives:

1. select and interpret mathematical information related to the workplace and employment
2. select from and use a variety of mathematical and problem-solving strategies in workplace and employment contexts to solve some problems
3. use oral and written mathematical language and representation to communicate mathematically in workplace and employment contexts.

Note: Objectives 4 and 5 are not assessed in this instrument.

Instrument-specific standards

Numeracy	
The student work has the following characteristics:	Grade
<ul style="list-style-type: none"> • selection and thoughtful interpretation of mathematical information related to the workplace and employment • accurate selection and use of a variety of effective practical mathematical and problem-solving strategies when applying mathematics in workplace and employment contexts to solve problems • controlled use of oral and written mathematical language and representation to communicate mathematically in workplace and employment contexts. 	A
<ul style="list-style-type: none"> • appropriate selection and interpretation of mathematical information related to the workplace and employment • selection and of a variety of relevant mathematical and problem-solving strategies in workplace and employment contexts to solve problems • some control in the use of oral and written mathematical language and representation to communicate mathematically in workplace and employment contexts. 	B
<ul style="list-style-type: none"> • selection and interpretation of mathematical information related to the workplace and employment • selection and use of a variety of mathematical and problem-solving strategies in workplace and employment contexts to solve some problems • use of oral and written mathematical language and representation to communicate mathematically in workplace and employment contexts. 	C
<ul style="list-style-type: none"> • selection and superficial interpretation of basic mathematical information related to the workplace and employment • selection and variable use of some practical mathematical and/or problem-solving strategies in workplace and employment contexts to make some progress • fragmented and unclear use of oral and written mathematical language and representation in mathematical communication in workplace and employment contexts. 	D
<ul style="list-style-type: none"> • use of rudimentary aspects of mathematical information related to the workplace and employment • inaccurate and sporadic use of mathematical strategies in workplace and employment contexts • infrequent and unclear use of mathematical language in workplace and employment contexts. 	E

Task

See the sample assessment instrument for IA2A: Examination — short response (available on the QCAA Portal).

Sample marking scheme

Criterion	Grade awarded
Numeracy Assessment objectives 1, 2, 3	A

Mark distribution and preliminary grade boundaries

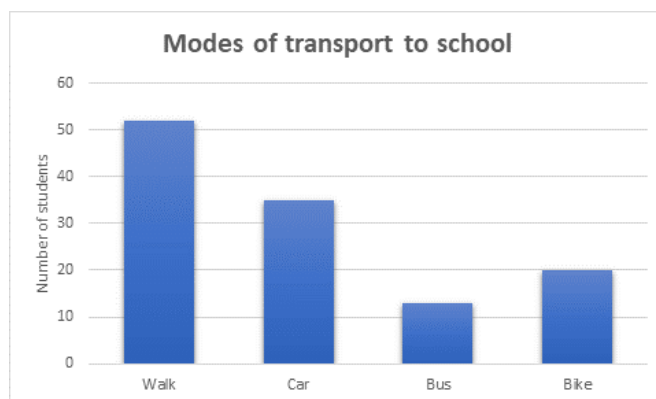
Question	Assessment objective 1	Assessment objective 2	Assessment objective 3	
1	1			
2		1		
3		1		
4		1		
5		1		
6			1	
7	1	1		
8	1	2		
9	1	1	1	
10	1	1	2	
11	2	1	1	
12		1	1	
13		1	1	
Totals	7	12	7	
Preliminary grade boundaries / 26				
A	B	C	D	E
26–21	20.5–16	15.5–10	9.5–5	4.5–0

Note: Preliminary grade boundaries are based on the school's experience with similar assessment instruments and on the relative number of marks available based on the descriptors (drawn from the syllabus instrument-specific standards). All grade boundaries must be confirmed once they have been applied to student responses and matched to syllabus standards.

The annotations are written descriptions of the expected response for each question and are related to the assessment objectives.

<p>Note: ✓ = $\frac{1}{2}$ mark</p> <p>1. select and thoughtfully interpret mathematical information related to the workplace</p> <p>3. accurately select and use a variety of effective mathematical strategies in workplace and employment contexts to solve some problems</p> <p>5. accurately select and use a variety of effective mathematical strategies in workplace and employment contexts to solve some problems</p> <p>7. select and thoughtfully interpret mathematical information related to the workplace accurately select and use a variety of effective mathematical strategies in workplace and employment contexts to solve some problems</p> <p>9. select and thoughtfully interpret mathematical information related to the workplace accurately select and use a variety of effective mathematical strategies in workplace and employment contexts to solve some problems</p>	<h2 style="text-align: center;">Marking scheme</h2> <p>Question 1 (1 mark) 0.3 m ✓ 300 mm ✓</p> <p>Question 2 (1 mark) Total distance = $63 + 29 + 84$ ✓ = 176 km ✓</p> <p>Question 3 (1 mark) Number of screws left = $250 - 123$ ✓ = 127 ✓</p> <p>Question 4 (1 mark) Amount of varnish for each job = $\frac{28.5}{6}$ ✓ = 4.75 L ✓</p> <p>Question 5 (1 mark) Paved area = $L \times W$ = 12.8×3 ✓ = 38.4 m^2 ✓</p> <p>Question 6 (1 mark) 27 minutes ✓✓</p> <p>Question 7 (2 marks) New price = $0.8 \times \\$300$ ✓✓ = \$240 ✓✓</p> <p>Question 8 (3 marks) Estimated total cost = $\\$20 \times 5 + \\$0.5 \times 10 + \\$1 \times 8$ ✓✓✓ = $\\$100 + \\$5 + \\$8$ ✓ = \$113 (approx.) ✓✓</p> <p>Question 9 (3 marks) Number of weeks = $\frac{60}{5}$ ✓✓ = 12 ✓ Number of weeks = $\frac{60}{6}$ ✓✓ = 10 ✓</p>	<p>2. accurately select and use a variety of effective mathematical strategies in workplace and employment contexts to solve some problems</p> <p>4. accurately select and use a variety of effective mathematical strategies in workplace and employment contexts to solve some problems</p> <p>6. use controlled written mathematical language and representation to communicate mathematically in employment contexts</p> <p>8. select and thoughtfully interpret mathematical information related to the workplace accurately select and use a variety of effective mathematical strategies in workplace and employment contexts to solve some problems use controlled written mathematical language and representation to communicate mathematically in employment contexts</p>
--	--	--

Question 10 (4 marks)



axes labelled with titles and appropriate scales ✓✓✓✓

correct bar graph ✓✓

number of students who rode a bike is correct and is displayed appropriately ✓✓

11a–b.

select and thoughtfully interpret mathematical information related to transport

12.

accurately select and use a variety of effective mathematical strategies in workplace and employment contexts to solve some problems

use controlled written mathematical language and representation to communicate mathematically in workplace contexts

Question 11 (4 marks)

- a. Every 20 minutes ✓
- b. 31 minutes ✓
- c. Total time = $31 \times 2 \times 5$ ✓
 $= 310$ mins ✓
 $= 5$ hours 10 mins ✓✓
- d. Total cost = $\$3.95 \times 2 \times 5$ ✓
 $= \$39.50$ ✓

Question 12 (2 marks)

$$\text{Fractional amount remaining} = \frac{3}{4} - \frac{1}{8} \checkmark$$
$$= \frac{5}{8} \checkmark$$

$$\text{Amount remaining} = \frac{5}{8} \times 20 \checkmark$$
$$= 12.5 \text{ kg} \checkmark$$

Question 13 (2 marks)

$$\text{Total monthly costs} = \$45 \times 12 \times 2 \checkmark$$
$$= \$1080 \checkmark$$

$$\text{Difference} = \$1080 - \$899 \checkmark$$
$$= \$181 \checkmark$$

10.

select and thoughtfully interpret mathematical information related to the mode of transport

accurately use information to create a bar graph

use controlled written mathematical language and representation to communicate mathematically

11c.

accurately select and use a variety of effective mathematical strategies to solve some problems

11d.

use controlled written mathematical language and representation to communicate mathematically in employment contexts

13.

accurately select and use a variety of effective mathematical strategies in workplace and employment contexts to solve some problems

use controlled written mathematical representation to communicate mathematically