

6

MATHEMATICS

SAMPLE RESPONSES



Walk the line

This booklet is designed to help teachers make overall, on-balance judgments by providing examples of student responses. The responses are not an exhaustive set.

E samples

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E Sample: Response 1

Guide to making judgments — Year 6 Mathematics Student

Purpose: To use non-standard units of measure to estimate distances and to solve related mathematical problems.

Knowledge and understanding	Thinking and reasoning	Communicating
Knowledge and understanding [Q 1, 2a, 2b, 4] Demonstrates rudimentary knowledge and understanding of the use of non-standard units of measure to estimate distances, by correctly completing some cells in the mud map table (Q 4). The step length calculation and estimates of object length are incorrect. There is a transcription error in the personal measurements table (Q 2a).	Thinking and reasoning Explains procedures and strategies used in making predictions, estimations and solving problems. Q 2c, 3, 5, 6	Communicating Uses mathematical language to communicate and justify thinking and reasoning. Q 1b, 2c, 3, 5d, 6
	A Clearly and consistently communicates and justifies thinking and reasoning using mathematical language, diagrams and correct units where necessary.	A
	B distances and estimations are clear, reasoning and explanation	B and working are logical and well-
	C Thinking and reasoning An attempt has been made to solve problems but most explanations are unrelated statements or show inappropriate reasoning.	C Correct units are present in most explanations and working are mostly
	D Correctly predicts who has the most steps	D
	E An attempt has been made to calculate lengths, times or directions. Explanations are unrelated statements.	E Provides occasional but mostly irrelevant working.

Feedback



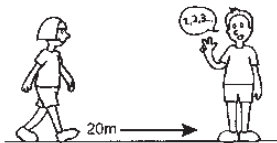
Overall grade

The purpose of this QCAT is for students to use non-standard units of measure to estimate distances and to solve related mathematical problems. This response typically demonstrates a very limited level of communication, understanding and application of the use of non-standard units of measure to estimate distances and solve multi-step problems. On balance, this work is an overall E.

E Sample: Response 1

Recording personal measurements

- 1 a) Complete the table below to find three personal measurements.
Use a ruler and round your measurements to the nearest centimetre.

Non-standard unit	Personal measurement
 Hand span	My hand span is: <u>20</u> cm
 Shoe length	My shoe length is: <u>30</u> cm
 Number of steps taken to walk 20 metres. (Use the track marked out by your teacher for this.)	The number of steps I took is: <u>33</u> steps

- 1 b) Find the length of one of your steps in centimetres.



- Divide the distance you walked (in centimetres) by the number of steps you took.
- Round your answer to the nearest centimetre.

Show all your working

$$\begin{array}{r} 2000 \\ : 33 \\ \hline 2000 \end{array}$$

One of my step lengths is about 20.00 centimetres

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

E Sample: Response 1

Now that you have recorded three personal measurements, you will use them to estimate other lengths.

Your teacher will provide an object for you to measure.

- 2 a) Measure the length of the object using your non-standard units. Record them in the table below.

Name of object: whiteboard

Non-standard unit	Number	Personal measurement (from page 4)
My hand span	...10... hand spans	...20... cm
My shoe length	...7... shoe lengths	...30... cm
My step length	...3... step lengths	...33... cm

- 2 b) Estimate the length of the object by converting your measurements of the object into centimetres.

My calculation of the length of the object:

- using my hand span is ...1000... cm
- using my shoe length is ...700... cm
- using my step length is ...300... cm

E Sample: Response 1

2 c) Complete the statements below.

My estimates of the object may not be all the same because their not all
the same numbers

I predict the non-standard unit that would give the most accurate estimate over this distance is:

hand span
because that is the highest number in the hole
question

E Sample: Response 1

Write your teacher's step length here:⁶⁰..... cm

Suppose you and your teacher walked 1000 metres together.

3 a) Who would take the most steps?^{me}.....

3 b) How many more steps would that person take?³⁰.....

Explain how you worked this out.

Show all working.

because the teachers foot is bigger than
my small feet i wood take more steps
then my teacher

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

E Sample: Response 1

4. Complete the table below using information from page 8.

Section	Distance walked in section (steps)	Distance walked in section (metres)	Time arrived at end of section	Time taken for section (minutes)
1. school front gate to corner Danzig Rd & Bridge Rd	450	1450	3:29 pm	14
2. corner of Danzig Rd to western end of the bridge	500	1950	3:37 pm	2
3. western to the eastern end of the bridge	150	2150	3:41 pm	6
4. eastern end of the bridge to corner Park St & Church Ave	600	270	3:45 pm	4
5. corner of Park St to corner Church Ave & View St	750	3150	4:01 pm	4
6. corner of Church Ave to home	750	4150	4:09 pm	8

5 a) Circle the section that is the shortest distance: 1 2 3 4 5 6

5 b) How long did it take Jack to walk home? 4750

5 c) How far does Jack walk home in metres? 4750

5 d) Where is Jack when he has walked half the distance home? Circle your answer below.

On Danzig Rd

On Bridge Rd

On the bridge

On Park St

On Church Ave

Explain how you worked this out.

because the bridge is halfway home

E Sample: Response 1

- 6 a) Work out the distance (in metres) between the school gate and Jack's home along the new road.

Show all your working.

Look at the mudmap look at the lines
A mud map is just a rough draft

- 6 b) State the direction of the school from Jack's house. *the direction shows*
you that N S E W of the direction is that
is shown on the mudmap

E Sample: Response 2

Guide to making judgments — Year 6 Mathematics Student

Purpose: To use non-standard units of measure to estimate distances and to solve related mathematical problems.

Knowledge and understanding	Thinking and reasoning	Communicating
Knowledge and understanding [Q 1, 2a, 2b, 4] Demonstrates variable knowledge and understanding of the use of non-standard units of measure to estimate distances. Correctly completes some cells in the mud map table (Q 4). The step length calculation (Q 1) uses a value not in the correct units, resulting in a personal measurements table (Q 2a), which is mostly correct. Estimates of object length are not calculated.	Thinking and reasoning An attempt has been made to solve problems but most explanations are unrelated statements or show inappropriate reasoning.	Communicating Provides occasional working with some use of units. Explanations are irrelevant.
Personal measurements and mud map tables contain some correctly completed cells.	Correctly predicts who has the most steps.	Provides occasional but mostly irrelevant working.
Personal measurements table is mostly correct.	An attempt has been made to calculate lengths, times or directions. Explanations are unrelated statements.	



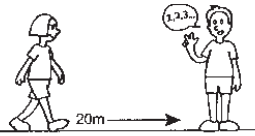
Overall grade
This response shows a limited understanding of the use of non-standard units of measure to estimate distances. However, it demonstrates great difficulty in choosing effective strategies to solve mathematical problems and unclear communication of ideas. Considering the purpose of the task, on balance, this work is an overall E.

Feedback

E Sample: Response 2

Recording personal measurements

- 1 a) Complete the table below to find three personal measurements.
Use a ruler and round your measurements to the nearest centimetre.

Non-standard unit	Personal measurement
 Hand span	My hand span is:14..... cm
 Shoe length	My shoe length is:26..... cm
 Number of steps taken to walk 20 metres. (Use the track marked out by your teacher for this.)	The number of steps I took is:29..... steps

- 1 b) Find the length of one of your steps in centimetres.



- Divide the distance you walked (in centimetres) by the number of steps you took.
- Round your answer to the nearest centimetre.

Show all your working

$$20 \div 29$$

One of my step lengths is about0.7..... centimetres

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

E Sample: Response 2

Now that you have recorded three personal measurements, you will use them to estimate other lengths.

Your teacher will provide an object for you to measure.

- 2 a) Measure the length of the object using your non-standard units. Record them in the table below.

Name of object: Blackboard

Non-standard unit	Number	Personal measurement (from page 4)
My hand span	<u>10</u> hand spans	<u>14</u> cm
My shoe length	<u>5</u> shoe lengths	<u>26</u> cm
My step length	<u>5</u> step lengths	<u>0.7</u> cm

- 2 b) Estimate the length of the object by converting your measurements of the object into centimetres.

My calculation of the length of the object:

- using my hand span is cm
- using my shoe length is cm
- using my step length is cm

E Sample: Response 2

2 c) Complete the statements below.

My estimates of the object may not be all the same because my step
is larger than my foot and handspan
and my foot is larger than my handspan

I predict the non-standard unit that would give the most accurate estimate over this distance is:

my stride
because step length is longer than all the
other things

E Sample: Response 2

Write your teacher's step length here:71.....cm

Suppose you and your teacher walked 1000 metres together.

3 a) Who would take the most steps?teacher.....

3 b) How many more steps would that person take?14.....

Explain how you worked this out.
Show all working.

$$\begin{array}{r} 140 \\ 71 \overline{) 1000} \end{array}$$

STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS

E Sample: Response 2

4. Complete the table below using information from page 8.

Section	Distance walked in section (steps)	Distance walked in section (metres)	Time arrived at end of section	Time taken for section (minutes)
1. school front gate to corner Danzig Rd & Bridge Rd			3:29 pm	14
2. corner of Danzig Rd to western end of the bridge	500	300	3:37 pm	8
3. western to the eastern end of the bridge	350	210	3:41 pm	4
4. eastern end of the bridge to corner Park St & Church Ave	200	270	3:45 pm	16
5. corner of Park St to corner Church Ave & View St	1150	690	4:01 pm	10
6. corner of Church Ave to home	850	510	4:09 pm	

5 a) Circle the section that is the shortest distance: 1 2 ③ 4 5 6

5 b) How long did it take Jack to walk home? 94 minutes

5 c) How far does Jack walk home in metres? 1980m

5 d) Where is Jack when he has walked half the distance home? Circle your answer below.

On Danzig Rd

On Bridge Rd

On the bridge

On Park St

On Church Ave

Explain how you worked this out.

because it looks half way

E Sample: Response 2

- 6 a) Work out the distance (in metres) between the school gate and Jack's home along the new road.

Show all your working.

I worked out if the Bridge Rd
is 2150 I think it will be
3m or 5m then the longer way

- 6 b) State the direction of the school from Jack's house. the direction is west

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