

Reflecting on Practice: Worthwhile Tasks

Unit 2 Session 3

***Please sit at a table with others
teaching a grade or subject in
which you are interested.***



Task Criteria

Focus of task:

- The task supports productive student discussion.
- The task has a sufficient level of critical thinking/cognitive demand.
- The task focuses on an important mathematical goal
i.e. can be related to a specified standard, cluster, domain, conceptual category and/or practice.

Framing of task:

- The task has at least one appropriate solution.
- The mathematics is correct.
- Diagrams or pictures have a clear mathematical or pedagogical purpose, which they are likely to fulfill.
- The context is relevant to the mathematics of the task.

- What evidence of understanding does the task ask the student to produce ?
- Will the task engage students in the mathematical practices?



Track

Angel and Jayden were at track practice. The track is $\frac{2}{5}$ kilometers around. Angel ran 1 lap in 2 minutes. Jayden ran 3 laps in 5 minutes.

1. Which of the following unit rates describe Angel's run? Choose all that apply.

- 5 minutes per km
- 5 km per minute
- $\frac{1}{5}$ minutes per km
- $\frac{1}{5}$ km per minute

2. Which of the following unit rates describe Jayden's run? Choose all that apply.

- $\frac{6}{25}$ minutes per km
- $\frac{6}{25}$ km per minute
- $\frac{25}{6}$ minutes per km
- $\frac{25}{6}$ km per minute

3. Who is running faster?

- Angel
- Jayden
- They are running at the same speed.

CCSS Grade 7, Ratios and Proportional Relationships: Analyze proportional relationships and use them to solve real-world and mathematical problems.

Originally Illustrative Mathematics

Task Criteria for the TRACK item

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- Diagrams or pictures have a clear mathematical or pedagogical purpose, which they are likely to fulfill.
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- What evidence of understanding does the task ask the student to produce ?
- Will the task engage students in the mathematical practices?

IM Track after IM Review

Angel and Jayden were at track practice. The track is $\frac{2}{5}$ kilometers around.

Angel ran 1 lap in 2 minutes.

Jayden ran 3 laps in 5 minutes.

- How many minutes does it take Angel to run one kilometer? What about Jayden?
- How far does Angel run in one minute? What about Jayden?
- Who is running faster? Explain your reasoning.



Grade Appropriate Problems

From the handout “Grade Appropriate Problems”, at your table consider your problem.

- *Using the rubric, how does the problem fare?*
- *What changes would you make to the problem to move it up the rubric?*



Plants

Arizona Grade 5

Grace measures a bean plant at the end of every week. At the end of week 1 the plant is 4 inches tall. The plant is 6 inches after five weeks. If the plant grows the same amount each week after the first week. How much does Grace's plant grow each week? Explain in words or pictures.

Baking Bread (7.NS.1)

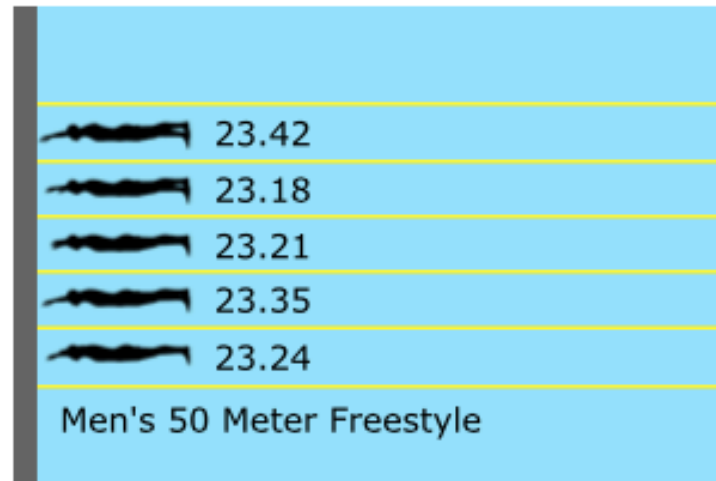
A bread recipe calls for:

1 cup flour, $\frac{2}{3}$ cup milk, $\frac{1}{4}$ cup water, $1\frac{1}{2}$ cups whole wheat flour

A) Show picture of liquid measuring cup. If water and milk were combined, show how high they would reach.



Five swimmers compete in the 50-meter race. The finish time for each swimmer is shown in the video.



Explain how the results of the race would change if the race used a clock that rounded to the nearest tenth.

CCSS Grade 5, Numbers and Operations in Base Ten:
Read, write, and compare decimals to thousandths.

<http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>



Critiquing and revising tasks

At your table, find a partner (or two).

As a team, by the end of today choose a problem from a given textbook chapter. We will

- 1) identify the mathematical goal/standards;
- 2) apply the task criteria;
- 3) modify the problem so it would receive (hopefully) all “yes” according to the criteria.



Process

There is a relevant textbook chapter in the Google Drive Folder <http://bit.ly/pcmi2013unit2>

Make a copy of the Google Doc Template in the Drive. Your document will be named “*Table # - Name of task*”

Each document will contain:

- 1) the original task, Heading Original
- 2) the mathematical goal,
- 3) a description of how the task matched the criteria,
- 4) their revised problem and
- 5) an explanation/commentary on the changes they made and how they improved the task.



References

- Arizona Department of Education (2009). AIMS Grade 5 Mathematics Sample Test www.mpsaz.org/academy/staff/jstaylor/files/aims5mathematicssampletestsanditemthink.pdf
- Florida Department of Education (2006). FCAT Mathematics Released Items, Grade 9.
- Illustrative Mathematics Project (2013). Items submitted for review.
- Illustrative Mathematics. (2013). Illustrations. www.illustrativemathematics.org/illustrations; item 462.
- Internet Classzone.com. i eWorkbook Plus. Chapter 5 Rational Numbers and Equations 5.3, page 233 <https://choong.wikispaces.com/file/view/Pre+Algebra+chap+5.1-3+Rational+Numbers.pdf>
- McGraw Hill Companies (2001). Linear Equations and Formulas Section 2.2. www.mhhe.com/math/devmath/streeter/ia/graphics/streeter5ia/cho2/others/strl_2.2.pdf
- Mcmillanmh.com. Math Online: Student Study Tools, Chapter 1. Use Place Value to Represent Whole Numbers. Page 18. <http://www.eht.k12.nj.us/~bowera/Math%20Connects%20Textbook%20Chapters/chap01.pdf>
- Nickerson, D. *Three Dimensional Figures*. Chapter 9, 9.4 Volume of Prisms and Cylinders, page 227. <http://calvertschoolweb.org/wliddle/6th%20Grade%20Textbook/Chapter%209.pdf>
- Smarter Balance Assessment Consortia. (accessed 2013). Sample items and performance tasks <http://sampleitems.smarterbalanced.org/itempreview/sbac/index.htm>
- Stitz, C. & Zeager, J. (2011). Lesson 3.2, Precalculus, Version 3 <http://wp.vcu.edu/prec calculus/files/2012/07/book-3rd-ed-2011.pdf>
- Whole numbers: Using an area model to explain multiplication. (Accessed June 2013). http://mathandteaching.org/uploads/SampleLesson_PDFs/Lesson_1.1.pdf

