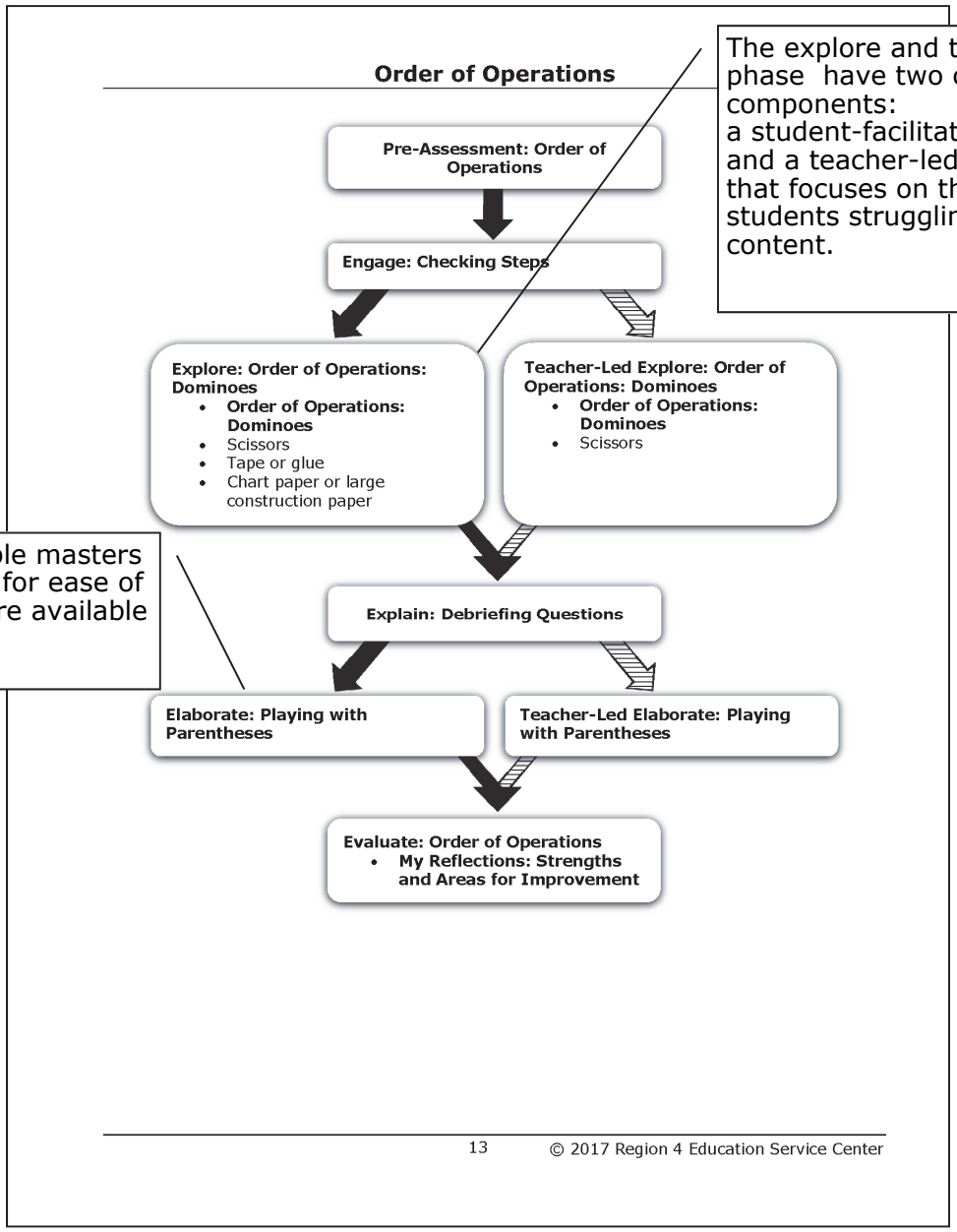
What is in a lesson found in *Closing the Distance*?



The explore and the elaborate phase have two concurrent components:
a student-facilitated activity and a teacher-led intervention that focuses on the needs of students struggling with the content.

Titles of reproducible masters are printed in bold for ease of reference. These are available in digital format.

What is in a lesson found in *Closing the Distance*?

Each lesson supports multiple student expectations with a focus on the STAAR® readiness standards. Student expectations are listed at the beginning of each lesson.

Materials for each phase are summarized on one page for ease in preparation.

Order of Operations

Phase	Activity Title	TEKS	Additional Materials	Instructional Grouping
Pre-Assessment	**Pre-Assessment: Order of Operations**	5(4)(E) 5(4)(F)		Individual
Engage	**Checking Steps**	5(4)(F)		Individual
Explore Explain	**Order of Operations: Dominoes** (1 per group)	5(4)(E) 5(4)(F)	• Scissors (1 per group) • Tape or glue (1 per group) • Chart paper or large construction paper (1 per group)	Groups of 2 Whole Group
Elaborate	**Playing with Parentheses**	5(4)(E) 5(4)(F)	• **Playing with Parentheses Cards**	Individual
Evaluate	**Evaluate: Order of Operations**	5(4)(E) 5(4)(F)	• **My Reflections: Strengths and Areas for Improvement**	Individual

Grouping strategies for each phase are summarized to assist in the arrangement of the classroom.

Bold items are included on the CD.
Italicized items require advanced preparation.

Pre-Assessment: Order of Operations

The purpose of this activity is to formatively assess students' understanding of how to simplify numerical expressions that do not involve exponents.

The identified activities are recommended for small-group, teacher-led interventions for students who may struggle with the specific content or process pieces in **Pre-Assessment: Order of Operations**.

Content	Teacher-Led Intervention
Describing the meaning of parentheses and brackets in a numeric expression	**Order of Operations: Dominoes**
Simplifying expressions with parentheses and brackets	**Order of Operations: Dominoes** **Playing with Parentheses**

A focused pre-assessment is provided for each lesson. Tier I intervention activities are identified for use with students who may struggle with the identified content.

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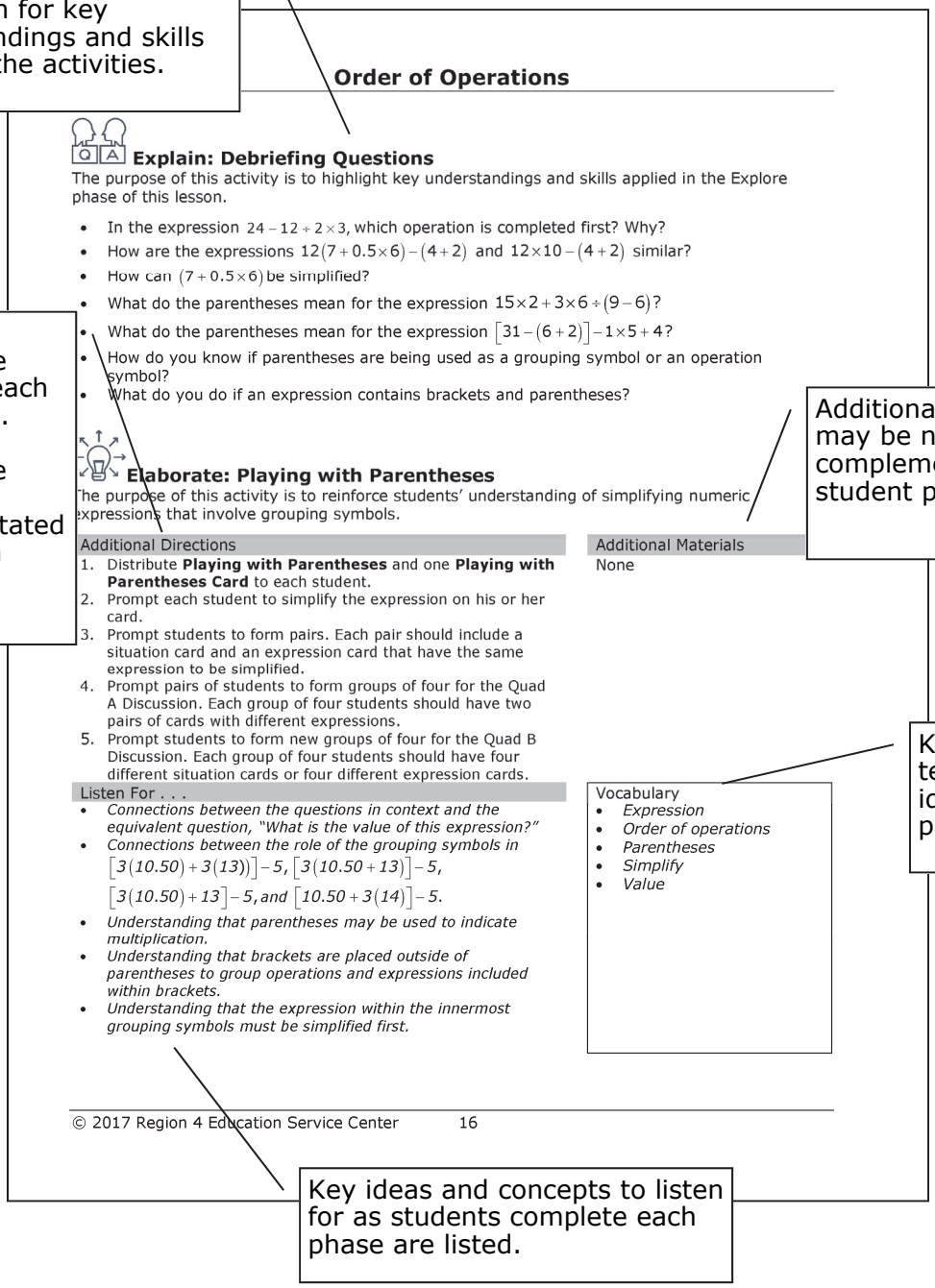
What is in a lesson found in *Closing the Distance*?

The explain phase includes debriefing questions to guide class discussion for key understandings and skills found in the activities.



Order of Operations

Explain: Debriefing Questions

The purpose of this activity is to highlight key understandings and skills applied in the Explore phase of this lesson.

- In the expression $24-12\div2\times3$, which operation is completed first? Why?
- How are the expressions $12(7+0.5\times6)-(4+2)$ and $12\times10-(4+2)$ similar?
- How can $(7+0.5\times6)$ be simplified?
- What do the parentheses mean for the expression $15\times2+3\times6\div(9-6)$?
- What do the parentheses mean for the expression $\left[31-(6+2)\right]-1\times5+4$?
- How do you know if parentheses are being used as a grouping symbol or an operation symbol?
- What do you do if an expression contains brackets and parentheses?

Elaborate: Playing with Parentheses

The purpose of this activity is to reinforce students' understanding of simplifying numeric expressions that involve grouping symbols.

Additional Directions

1. Distribute **Playing with Parentheses** and one **Playing with Parentheses Card** to each student.
2. Prompt each student to simplify the expression on his or her card.
3. Prompt students to form pairs. Each pair should include a situation card and an expression card that have the same expression to be simplified.
4. Prompt pairs of students to form groups of four for the Quad A Discussion. Each group of four students should have two pairs of cards with different expressions.
5. Prompt students to form new groups of four for the Quad B Discussion. Each group of four students should have four different situation cards or four different expression cards.

Additional Materials

None

Listen For . . .

- *Connections between the questions in context and the equivalent question, "What is the value of this expression?"*
- *Connections between the role of the grouping symbols in* $\left[3(10.50)+3(13)\right)]-5$, $\left[3(10.50+13)\right]-5$, $\left[3(10.50)+13\right]-5$, *and* $\left[10.50+3(14)\right]-5$.
- *Understanding that parentheses may be used to indicate multiplication.*
- *Understanding that brackets are placed outside of parentheses to group operations and expressions included within brackets.*
- *Understanding that the expression within the innermost grouping symbols must be simplified first.*

Vocabulary

- *Expression*
- *Order of operations*
- *Parentheses*
- *Simplify*
- *Value*

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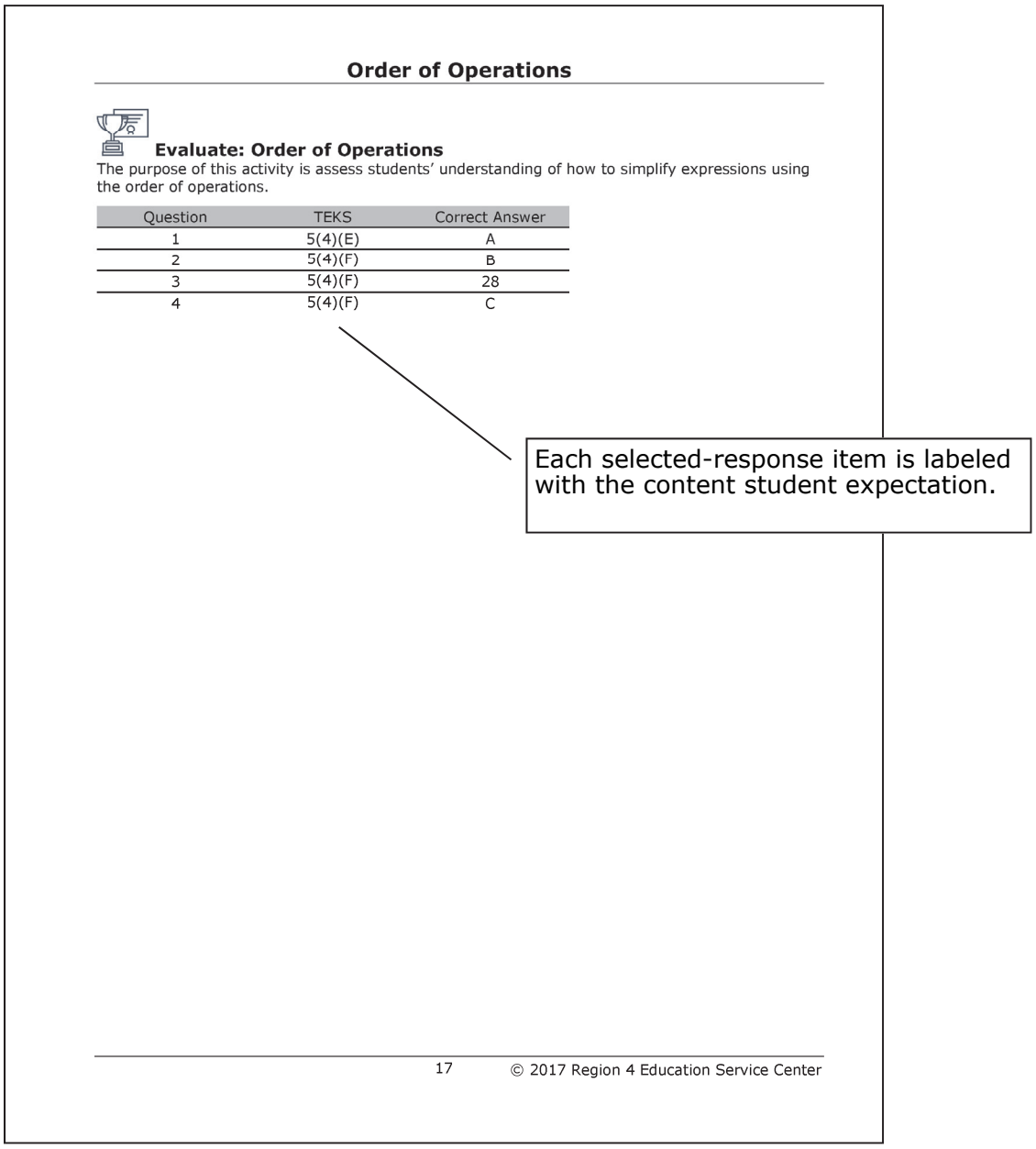
Complete directions are included on each student page. Additional directions are provided for teacher-facilitated aspects of an activity.

Additional materials may be needed to complement the student pages.

Key vocabulary terms are identified for each phase.

Key ideas and concepts to listen for as students complete each phase are listed.



Order of Operations

Evaluate: Order of Operations

The purpose of this activity is assess students' understanding of how to simplify expressions using the order of operations.

Question	TEKS	Correct Answer
1	5(4)(E)	A
2	5(4)(F)	B
3	5(4)(F)	28
4	5(4)(F)	C

Each selected-response item is labeled with the content student expectation.

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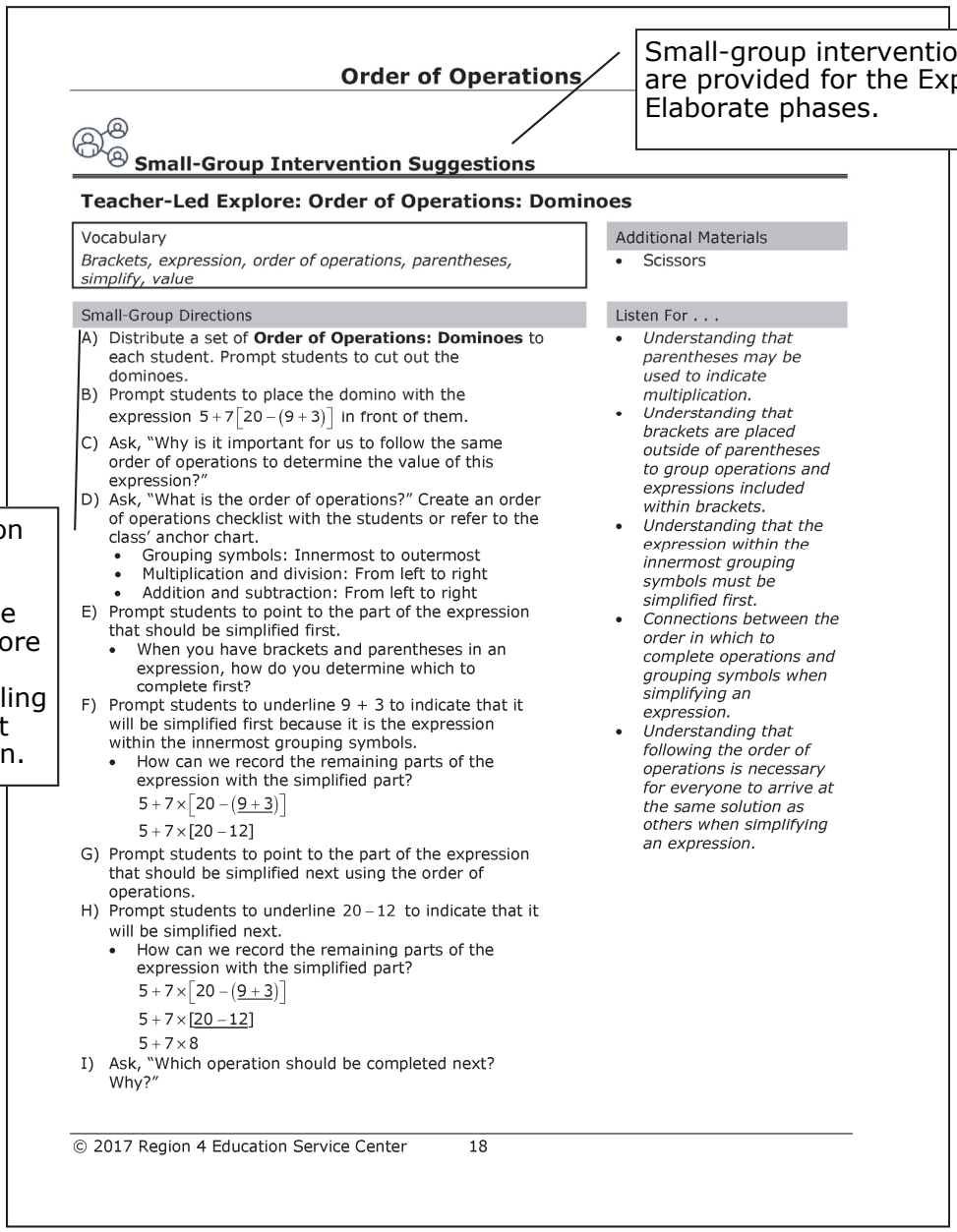
What is in a lesson found in *Closing the Distance*?



Order of Operations

Small-group intervention suggestions are provided for the Explore and the Elaborate phases.

Small-Group Intervention Suggestions

Teacher-Led Explore: Order of Operations: Dominoes

Vocabulary

Brackets, expression, order of operations, parentheses, simplify, value

Additional Materials

- Scissors

Small-Group Directions

A) Distribute a set of **Order of Operations: Dominoes** to each student. Prompt students to cut out the dominoes.

B) Prompt students to place the domino with the expression $5+7\left[20-(9+3)\right]$ in front of them.

C) Ask, "Why is it important for us to follow the same order of operations to determine the value of this expression?"

D) Ask, "What is the order of operations?" Create an order of operations checklist with the students or refer to the class' anchor chart.
- Grouping symbols: Innermost to outermost
- Multiplication and division: From left to right
- Addition and subtraction: From left to right

E) Prompt students to point to the part of the expression that should be simplified first.
- When you have brackets and parentheses in an expression, how do you determine which to complete first?

F) Prompt students to underline 9 + 3 to indicate that it will be simplified first because it is the expression within the innermost grouping symbols.
- How can we record the remaining parts of the expression with the simplified part?

$5+7\times\left[20-(\underline{9+3})\right]$

$5+7\times[20-12]$

G) Prompt students to point to the part of the expression that should be simplified next using the order of operations.

H) Prompt students to underline $20-12$ to indicate that it will be simplified next.
- How can we record the remaining parts of the expression with the simplified part?

$5+7\times\left[20-(\underline{9+3})\right]$

$5+7\times[\underline{20-12}]$

$5+7\times8$

I) Ask, "Which operation should be completed next? Why?"

Listen For . . .

- *Understanding that parentheses may be used to indicate multiplication.*
- *Understanding that brackets are placed outside of parentheses to group operations and expressions included within brackets.*
- *Understanding that the expression within the innermost grouping symbols must be simplified first.*
- *Connections between the order in which to complete operations and grouping symbols when simplifying an expression.*
- *Understanding that following the order of operations is necessary for everyone to arrive at the same solution as others when simplifying an expression.*

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Each intervention provides instructions on how to make the mathematics more explicit for students struggling with the content within the lesson.

Each lesson provides an opportunity for student reflection as the student self-assesses strengths for each phase of the lesson. Following this self-assessment, students are prompted to note what they are most proud of and to set a goal to improve understanding.

Name: _____ Date:_____

My Reflections: Strengths and Areas for Improvement

Place a plus sign for each statement you feel is a strength after completing each lesson activity.

Lesson Activity	I can describe the meaning of parentheses or brackets in a numeric expression.	I can simplify expressions with parentheses or brackets.	I can identify all multiplication and division that must be done before addition and subtraction.	I can complete multiplication and division from left to right.	I can complete addition and subtraction from left to right.
Checking Steps					
Order of Operations: Dominoes					
Playing with Parentheses					
Evaluate: Order of Operations					

I am most proud . . .

_____

_____

_____

To improve my understanding, I . . .

_____

_____

_____

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Nombre: _____ Fecha:_____

Pre-evaluación: Comparar y ordenar decimales

Determina si cada oración numérica, o par de oraciones numéricas, es verdadera o falsa. Justifica tu respuesta.

Oración numérica	Verdadera o falsa	Justificación
$14.734 > 14.73$		
$0.215 < 0.2 < 0.151$		
$139.06 = 139.060$		
$7.544 > 7.444 > 7.344$		
$0.608 > 0.68$		
$27.935 > 29.935$		

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