Los Angeles Unified School District
Office of Curriculum, Instruction, and School Support
MATH MYTHS AND MISCONCEPTIONS
SESSION 3 FACILATOR'S GUIDE
Concepts of Subtraction—Preventing Misconceptions

Materials: ☐ chart paper   ☐ markers for charting   ☐ blank paper for note taking   ☐ computer-if presenting PowerPoint live   ☐ LCD-if presenting PowerPoint live   ☐ PowerPoint handout pages-optional   ☐ timer-optional   ☐ Handout #1-optional

TIME	CONTENT	MATERIALS
	Notes to session Facilitator: o This session is designed to be a facilitated discussion of approximately 45 to 60 minutes, but can be extended to a longer time-block. Timing can be adjusted to fit your needs. The session can be done during a staff development, a grade-level, or other instructional meeting time. o This document is intended to be a <u>guide</u> to the facilitator, not a verbatim script to be read to the participants. This document contains background information, speaking notes, and a listing of materials needed to present this session. o It is highly recommended that the facilitator become familiar with the content of this presentation in order to facilitate a productive and in-depth discussion with the participants. o Handouts are indicated by the letters HO and the # symbol. These need to be copied and ready for each participant prior to the presentation of this session. Be sure to note and prepare ahead any other materials needed for the session, such as charts, manipulative, etc. o **Bold** type font indicates specific speaking points for the facilitator, while (*Italized)* type font indicates notes or suggestions to the facilitator. o Prior to the session, be sure to set up projector, screen, and computer if you are presenting the PowerPoint live. Test equipment for proper functioning. The individual PowerPoint slides can also be Xeroxed and presented as hard copies if a projector and a computer are not available. o Be sure materials, equipment, and room are set up prior to the arrival of the participants. Arrange desks/chairs to facilitate group discussion and interaction. o The PowerPoint can be printed out as a handout and can be provided to the participants at the beginning of the session as a note-taking tool or given at the end of the session as a reference sheet. Do not read the PowerPoint slides to the participants unless the facilitator's guide indicates that you should do so. Use the background notes to enhance the information on the slide. o Consider having a co-presenter to help with charting group responses. Or ask for a participant volunteer to chart while you facilitate the discussion.	Prepare ahead either one chart with three sections, or three charts, one for each heading. The headings are: **Taking Away Examples**; **Comparing Quantities Examples**; and, **Missing Addends Examples**

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	Slide 1: *(Have slide 1 projected as participants enter the session. Welcome participants to the session.)*	
1 min	**Slide 2:** (Session 1 title slide) **This is another in a series of professional development sessions focusing on the misconceptions our students may have in relation to mathematics and what we can do to repair, or better yet, prevent, these misconceptions. For this session, we will be looking at the concepts of subtraction and discussing teaching tips for our classrooms.**	
3 min total	**Slide 3 through Slide 5:** *(Ask a volunteer to read the slide aloud to the group. Click to the next slide and ask another volunteer to read. Continue this for Slide 4 and Slide 5.)*	
5 min	**Slide 6:** *(Optional: provide* **[HO#1]** *for participants to record their own copy of subtraction examples)* **One of the key concepts of subtraction is the idea of taking away, taking apart, or decreasing the amount in a set quantity. In this example, we see that there was a quantity of money and subsequently some of it was spent, or "taken away." The underlying understanding is that something has been physically removed from the original amount.** **What are some other examples which would show this concept of taking away or decreasing an amount?** *(Ask volunteers to share ideas. Record those examples on the **Taking Away Examples** chart.)*	**HO#1-** Subtraction Concepts recording sheet Record participants' examples on the **Taking Away Examples** chart
7 min	**Slide 7:** **Another key concept of subtraction is the comparison of two quantities to show the difference between them. In this case, unlike the take away model, nothing is being removed from either set. We are actually comparing the size of each and ultimately determining which one is larger than the other and by how much.**	Record participants' examples on the **Comparing Quantities**

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	The quantity of items does not change. In fact, as seen in the example, we actually have a picture of 8 and 5, or 13 objects. Here we see that the comparison between the quantity of 8 and the quantity of 5 is 3. But the picture shows 13 actual objects. **In the previous model of take away, we had 15 total items and removed 7 of them to get our result of 8. A very different picture.** **What are some other examples which would show this concept of comparing two quantities to show the difference between them?** *(Ask volunteers to share ideas. Record those examples on the **Comparing Quantities Examples** chart.)*	**Examples** chart
5 min	**Slide 8:** **A third key concept of subtraction is that of missing addends. This concept is also used in addition.** *(Note to faciliatator—see Session 2, slide 8 of Concepts of Addition.)* **The difference comes in how one approaches the situation. In the case of the cakes, the baker has completed 3 already towards her total of 5. By subtracting the cakes made from the cakes needed, she will find that 2 more need to be made.** **What are some other examples which would show this concept of change from a starting point?** *(Ask volunteers to share ideas. Record those examples on the **Missing Addends Examples** chart.)*	Record participants' examples on the **Missing Addends Examples** chart
25 to 40 min	**Slide 9 through Slide 18:** *(For the next 6 slides, spend a few minutes on each discussing the tip and how it impacts student learning and understanding of addition)*	
	Wrap Up: (This can be done either orally as a group, or as a written reflection on the learning.)	

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	o **How has the session supported you as you consider the instructional needs of your students?**	