

Appendix: 18 Example-Tracing Tutors

We provide screenshots of the 18 example-tracing tutors built since 2009 that are discussed in the body of the document.

Mathtutor

1 2 3 4 5 6 7 8 9 10

Twenty people are going to a concert. There are eight more children than adults.

How many children and adults were at the concert?

children

adults

Yes, indeed! So how many people is ONE unknown part?

Number of children =

Number of adults =

2 x =

1 x =

Find Sum of Parts
Identify Given Values
Identify Unknown Part
Interpret Representations
Set-up Equation
Solve Equation

Done

Hint: If two parts together are 12 people, how many people would one part be?

Previous Next

1 2 3 4 5 6 7 8 9 10

You are walking in a forest holding a GPS device that tells you how fast you are going. You try to walk at a constant pace of 3 miles per hour.

Enter the y-coordinates in the table, then plot the points on the line. You can use the points to read-off the x-values.

- What distance will you have walked in two hours?
- How far will you have walked if you walk for three hours?
- What distance will you have walked in four hours?

Now, use the line you have drawn to answer 4 and 5 below.

- How long does it take to walk 15 miles?
- The next town is 27 miles away. How long will it take you to reach it?

Quantity Name	time	distance
Unit	hours	miles
Question 1	2	6
Question 2	3	9
Question 3	4	12
Question 4	5	15
Question 5	please place a point first	
Equation	y =	

distance miles

time hours

Calculate y value
Determine x coordinate
Draw a line
Find equation
Name quantities
Name units
Plot point given coords

Done

Hint: The point for question 5 would not fit on the grapher right now. Please adjust the right boundary of the x-axis (in the bottom right box).

Instructions Previous Next

Mathtutor (Aleven et al. 2009a) is a comprehensive web-based tutoring system for mathematics in grades 6 through 8.

Genetics Tutor

1. Determine the dominance and linkage of the disease shown and then determine the probabilities that the labeled individuals are carriers of the disease.

1. Determine the dominance/linkage for the pedigree.

The disease allele for this trait is recessive.

The trait is autosomal.

2. Enter the probability the selected individuals are carriers in the fields at the right.

3. Finally, enter the probability VI-1 is affected.

0.25*0.5*1/12*0.5

The probability of inheriting the disease allele from V-4 is $1/4 * 1/2 = 1/8$.

The probability of inheriting the disease allele from V-5 is $1/12 * 1/2 = 1/24$.

What is the probability that VI-1 will inherit the allele from both parents?

← Previous Next →

? Hint ✓ Done

2. You have already shown (Problem 1) that very strong selection against the homozygous recessive does not significantly change the frequency of the recessive allele when the allele is at VERY LOW FREQUENCY in the population. In this problem, you will examine how such very strong selection against the homozygous recessive changes the frequency of the recessive allele when the recessive allele is at VERY HIGH FREQUENCY.

1.) You have only one data point ($w(cc)$ frequency = 0.6) and one tool, the HW equation ($p^2 + 2pq + q^2 = 1$). Consider how the genotype frequencies in this population change in one generation.

2.) There is an intense selection ($w(cc) = 0.0$) against the affected homozygous recessives. How does this selection change the numbers of each genotype in two successive generations (population of 10,000) when the recessive allele is very frequent?

Table 1: Generation 1 (Population Size = 10,000)

Genotype	Frequency in Generation 1	Numbers before Selection	Numbers after Selection
CC Homozygote	0.36	3600	3600
Cc Heterozygote	0.48	4800	4800
cc Homozygote	0.16	1600	0
Totals	1	10000	8400

Table 2: Generation 2 (Population Size = 10,000)

Genotype	Frequency in Generation 2	Numbers before Selection	Numbers after Selection
CC Homozygote	0.5102	5102	5102
Cc Heterozygote	0.4082	4082	4082
cc Homozygote	0.0816	816	0
Totals	1	10000	9184

Table 3: Allele Frequencies

	Generation 1	Generation 1 Survivors	Generation 2 Survivors
C (dominant):	0.6	0.7143	0.7778
c (recessive):	0.4	0.2857	0.2222

? Hint ✓ Done

← Previous Next →

1. In problem 1, recessive allele (c) frequency decreased from 0.02 to 0.0192. How much do the allele frequencies change in this problem when there is selection against the homozygous recessives as before, but RECESSIVE ALLELES ARE MUCH MORE FREQUENT?

Conclusion: Recessive allele frequency decreases a lot MORE THAN WHEN THE RECESSIVE ALLELE IS INFREQUENT.

Explanation: When recessive alleles are frequent, homozygotes carry a large proportion of those alleles.

2. Examine the graph. What long-term evolutionary outcome is expected under these circumstances compared to problem 1?

Observation: Loss of the recessive allele is fast initially but continually slows down.

Summary: Loss of recessive alleles is much faster when homozygous recessive frequency is much higher.

The *Genetics Tutor* (Corbett et al. 2010) covers a wide range of problem-solving activities in high-school and college-level genetics

Lynnette – Basic Equation Solving

Please solve this equation.

<input type="text" value="5x+2"/>	=	<input type="text" value="2x+8"/>	
<input type="text" value="5x+2-2"/>	=	<input type="text" value="2x+8-2"/>	<input type="text" value="subtract (?) from both sides"/> <input type="text" value="2"/>
<input type="text" value="5x"/>	=	<input type="text" value="2x+6"/>	
<input type="text" value="5x-2x"/>	=	<input type="text" value="2x+6-2x"/>	<input type="text" value="subtract (?) from both sides"/> <input type="text" value="2x"/>
<input type="text" value="3x"/>	=	<input type="text" value="6"/>	
<input type="text" value="3x/6"/>	=	<input type="text"/>	

Solution: x =

What can you do to both sides to get x by itself?

?
Hint

i
Instructions

← Previous
Next →

✓
Done

Mathematically, what you did is correct, but unfortunately, you are back to $-7x = 9 - 4x$, the same equation as before. To make progress, add or subtract something other than 9.

← Previous
Next →

please solve for x: $-10 - 7x = -1 - 4x$

<input type="text" value="-7x-10+10"/>	=	<input type="text" value="-1+10-4x"/>	<input type="text" value="Added"/>	<input type="text" value="10"/>	<input type="text" value="to/from both sides"/>
<input type="text" value="-7x"/>	=	<input type="text" value="9-4x"/>			
<input type="text" value="-7x-9"/>	=	<input type="text" value="-4x"/>	<input type="text" value="Subtracted"/>	<input type="text" value="9"/>	<input type="text" value="to/from both sides"/>
<input type="text" value="-7x"/>	=	<input type="text" value="9-4x"/>	<input type="text" value="Added"/>	<input type="text" value="9"/>	<input type="text" value="to/from both sides"/>
<input type="text"/>	=	<input type="text"/>			

x	y	z	7	8	9	√	^	DEL
A	B	C	4	5	6	*	/	()
:	=	0	1	2	3	+	-	[]
↵	ABC	⚙	.	,	;	{ }	↩	

1:17 PM

Lynnette is a tutor for basic equation solving for grades 6, 7, and 8, was originally implemented as an example-tracing version (top) (Long and Alevan 2013a, b; Waalkens et al. 2013), and was later re-implemented, also with CTAT, as a rule-based Cognitive Tutor (bottom) (Long and Alevan 2014)

The Tuning Tutor – Parameter Fitting in Machine Learning

Parameter Tuning: ◀ 1 2 3 4 5 6 7 8 9 10 ▶

In the first stage we selected the setting we would use to build a tuned model over the whole data set (which we would do in stage 2). Now we want to estimate what that model's performance would be on new data (stage 3). We do that using an embedded cross validation.

In the table below, the top 5 rows represent the inner loop of the cross validation and the bottom 5 rows represent the outer loop. For the outer loop we just divide each fold into a training set and a testing set, as we did for the simple cross validation. The only exception here is that we may select a different setting on each fold based on the inner loop. For the inner loop, instead of a cross validation on the training data for each fold, we divide each fold into train, validation, and hold out. The hold out is the test set, which we will not consult on the inner loop. The train set is what we train on and the validation set is what we test on. Based on this train/test split for a fold, we will make a selection of a setting for that fold, which we will then use in the outer loop.

Training	Validation	Hold out	A	B	C	D
{Y3,Y4,Y5}	{Y2}	{Y1}	0.58	0.73	0.94	0.71
{Y1,Y3,Y5}	{Y4}	{Y2}	0.45	0.59	0.52	0.67
{Y1,Y2,Y4}	{Y5}	{Y3}	0.74	0.67	0.56	0.68
{Y1,Y2,Y5}	{Y3}	{Y4}	0.78	0.79	0.67	0.5
{Y2,Y3,Y4}	{Y1}	{Y5}	0.69	0.75	0.76	0.43
{Y2,Y3,Y4,Y5}	{Y1}	-	0.59	0.58	0.62	0.57
{Y1,Y3,Y4,Y5}	{Y2}	-	0.61	0.69	0.62	0.82
{Y1,Y2,Y4,Y5}	{Y3}	-	0.81	0.37	0.79	0.76
{Y1,Y2,Y3,Y5}	{Y4}	-	0.71	0.8	0.53	0.57
{Y1,Y2,Y3,Y4}	{Y5}	-	0.59	0.68	0.52	0.64

We compare the baseline model with the tuned model to see whether the tuning process makes significant improvement.

Fold	Baseline Model Performance	Tuned Model Performance
{Y1}	0.59	0.62
{Y2}	0.61	0.82
{Y3}	0.81	
{Y4}	0.71	
{Y5}	0.59	
Average	0.662	

1. Please click on the highest performance value for fold 3 on the inner loop and then click on the corresponding performance value for the outer loop.

The performance value you have selected on the inner loop is not the highest performance value.

◀ Previous
Next ▶

? Hint
✔ Done

The *Tuning Tutor* helps graduate students and advanced undergraduate students learn to use cross validation to avoid overfitting when tuning model parameters. It was used at Carnegie Mellon University in a course for graduate students and advanced undergrads called “Applied Machine Learning” by Carolyn Rosé

Stoichiometry Tutor

Stoichiometry Tutor | Worked Example [Help](#)

Problem Statement

Let's convert a substance that is in milligrams to grams. We'll calculate the number of grams (g) that are in 10.6 milligrams (mg) of wood alcohol (COH₄). Our result should have 3 significant figures.

Problem

#	Units	Substance	#	Units	Substance	#	Units	Substance	#	Units	Substance	Result
10.6	mg	COH ₄	1	g	COH ₄							0.0106
			1000	mg	COH ₄							

Reason

Reason	Reason	Reason	Reason

Stoichiometry Tutor | Worked Example [Help](#)

Problem Statement

Let's convert a substance that is in milligrams to grams. We'll calculate the number of grams (g) that are in 10.6 milligrams (mg) of wood alcohol (COH₄). Our result should have 3 significant figures.

Problem

#	Units	Substance	#	Units	Substance	#	Units	Substance	#	Units	Substance	Result
10.6	mg	COH ₄	1	g	COH ₄							0.0106
			1000	mg	COH ₄							

Reason

Reason	Reason	Reason	Reason
Unit Conversion	Unit Conversion		



There are some errors in the solution. The steps in red are incorrect. Please take some time to review your work. When you are ready, select the 'Next' button to move on.

[Next](#)

The *Stoichiometry Tutor* (McLaren et al. 2014, 2015b, 2016) supports the narrated replay of example solutions. As the steps of the problem are replayed, a flashing yellow box draws the student's attention to the next step of the worked example (top). After the worked example plays back, the student is prompted to fill out the reasons for every step, and then their solution is evaluated (i.e., delayed feedback; bottom).

AdaptErrEx – Erroneous Examples

Allison has two ribbons. One ribbon is 0.125 inches long and the other is 0.83 inches long. Allison's friend asks her to choose the longest ribbon.

Allison said this incorrect answer: I placed the numbers on a number line to see that 0.125 is the largest, so I want the 0.125 inch long ribbon.



What did Allison do wrong?
She thinks that ____.

- longer decimals are smaller
- shorter decimals are smaller than zero
- shorter decimals are larger
- longer decimals are larger

Click on the line where the incorrect point should go to fix Allison's error.



Looking at the corrected number line, which ribbon is longer?

- 0.83 inches because it is closer to 1
- 0.125 inches because it is closer to 0

What advice would you give to Allison to solve the problem right next time?
Allison, to find the longest ribbon you should pay attention to which decimal ____.

- is the shortest
- is the longest
- has the smallest number in the tenths place
- has the largest number in the tenths place

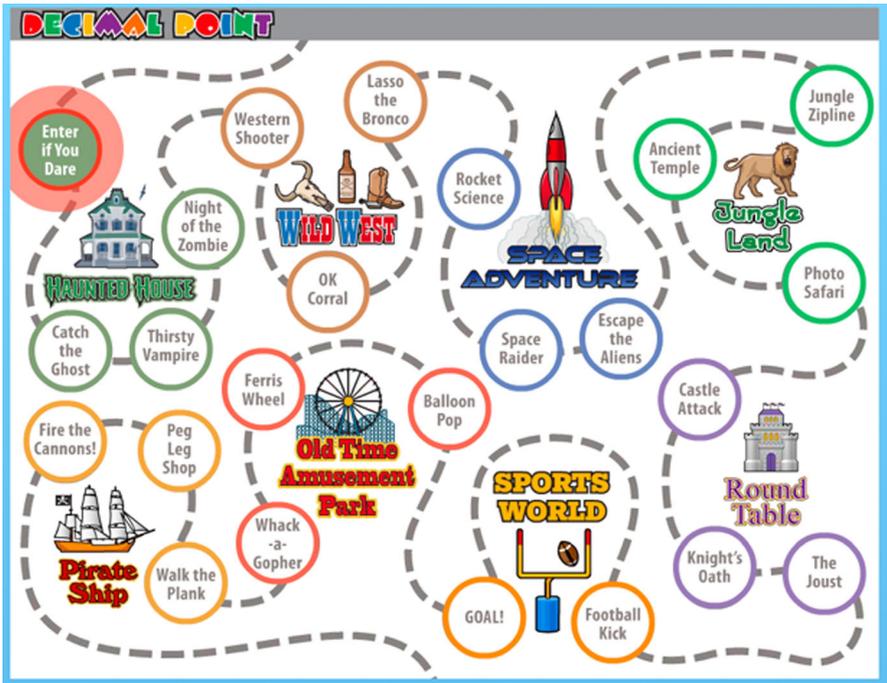
Message Window
You've got it. Well done.

← Previous Next →

Done

AdaptErrEx (Adams et al., 2014; McLaren et al. 2015) is an example-tracing tutor for learning decimals (part of 6th-grade mathematics) that has students identify, correct, and explain incorrect steps in worked-out problem solutions

Decimal Point: Educational Games for Learning Decimals



ENTER IF YOU DARE

Help the ghost enter the haunted house by correctly placing the skull at 0.2 on the number line.

Rhys wants to help the ghost. Watch to see how he does. Click Start to begin.

START

This is so simple!

0 1

Decimal Point (Forlizzi et al., 2014), built using CTAT as foundation, supports game-based learning with erroneous examples to help middle-school students learn decimals

Proportional Reasoning Tutor

Practice Problems: Page 6 of 17 ✖

3. Bill's Hometown Furniture Store creates custom-ordered furniture. Last week, Bill, the owner, received an order for 12 identical kitchen cabinets. Bill hired 4 carpenters who were able to make 7 cabinets in 5 days. Unfortunately, over the weekend, one of the carpenters broke his arm and will be unable to help finish the order. If Bill has 3 healthy carpenters complete the remaining cabinets, how long will it take them to finish the job?

Step 1.

$$\frac{4}{7} = \frac{3}{x}$$

Step 2.

$$4 \cdot x = 7 \cdot 3$$

$$4x = 21$$

Step 3.

$$x = \frac{4}{1}$$

$$x = \frac{21}{4}$$

?
Hint

Please enter '21' in the highlighted field.

← Previous
Next →

✓
Done

The *Proportional Reasoning Tutor* (Earnshaw, 2014) supports worked examples and tutored problems in middle-school mathematics

Fractions Tutor

Making Fractions

A Let's make a fraction to compare it to another!

This is the unit. Let's make $\frac{4}{5}$.

1 Into how many equal sections must you partition the unit?

2 Drag one section into the empty circle.

3 The blue section is $\frac{1}{5}$ of the gray circle.

4 To show $\frac{4}{5}$, you need sections.

B Let's make a second fraction to compare it to the first!

This is the unit. Let's make $\frac{4}{9}$.

1 Into how many equal sections must you partition the unit?

2 Drag one section into the empty circle.

3 The purple section is $\frac{1}{9}$ of the gray circle.

4 To show $\frac{4}{9}$, you need sections.

?
Hint

continue

Wonderful!

C Which fraction is bigger?

1 How many total sections are in the blue circle?
How many total sections are in the purple circle?

2 The blue sections are **larger than** the purple sections because there are **fewer** sections in the blue circle.

3 Since both circles have colored sections, $\frac{4}{5}$ **larger than** $\frac{4}{9}$

Equivalent Fractions

A Let's review a rectangle as an example to find equivalent fractions!

= $\frac{4}{5}$ The rectangles below should all show the same amounts.

OK

OK

OK

1 Type in the fraction shown in the pink rectangle.

B Let's partition number lines to make equivalent fractions!

All number lines below show the same amounts.

= $\frac{4}{5}$

OK

OK

OK

1 Partition each number line into differently sized sections that remain equivalent to each other. Then, type in the fraction that each number line shows.

?
Hint

continue

You did it!

C What did we learn about the rectangle and the number line?

1 Multiplying the numerator and the denominator by the same number is like partitioning the areas into more sections **without** changing the amount.

2 Rectangles and number lines show **the same** amount with **different** numbers of sections show equivalent fractions.

The *Fractions Tutor* (Rau et al. 2013, 2014, 2015a) supports conceptual learning of fractions in grades 4 and 5 using multiple interactive graphical representations of fractions

Grounded Feedback Tutor

$\frac{2}{7}$

+

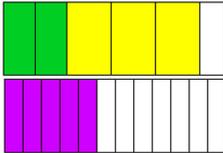
$\frac{3}{5}$

=

?







I need to convert this fraction

I need to convert this fraction

$$\frac{\boxed{2}}{\boxed{7}} + \frac{\boxed{3}}{\boxed{5}} = \frac{\boxed{5}}{\boxed{12}}$$

?
Hint
Hint

Done

← Previous
Next →

$\frac{2}{7}$

+

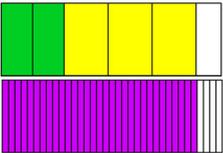
$\frac{3}{5}$

=

?







$$\frac{2 \times \boxed{5} = \boxed{10}}{7 \times \boxed{5} = \boxed{35}}$$

$$\frac{3 \times \boxed{7} = \boxed{21}}{5 \times \boxed{7} = \boxed{35}}$$

$$\frac{\boxed{10}}{\boxed{35}} + \frac{\boxed{21}}{\boxed{35}} = \frac{\boxed{31}}{\boxed{35}}$$

?
Hint
Hint

Done

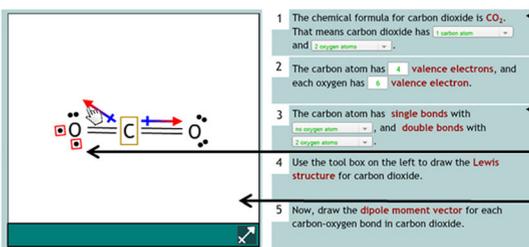
← Previous
Next →

Grounded Feedback Tutor (Stampfer & Koedinger, 2013; Wiese & Koedinger, 2015) for elementary school fractions learning uses a graphical representation to provide feedback on students' solutions, instead of providing explicit correctness feedback. As the student enters a solution using numeric symbols, the fraction bars (except those representing the given fractions) are updated by the system to reflect the student input

Chem Tutor

Bonding

Let's make the Lewis structure for carbon dioxide!



- 1 The chemical formula for carbon dioxide is CO_2 . That means carbon dioxide has carbon atom and oxygen atoms.
- 2 The carbon atom has valence electrons, and each oxygen has valence electron.
- 3 The carbon atom has bonds with oxygen atoms, and bonds with oxygen atoms.
- 4 Use the tool box on the left to draw the Lewis structure for carbon dioxide.
- 5 Now, draw the dipole moment vector for each carbon-oxygen bond in carbon dioxide.

Hint
? You're close! You drew the right number of lone pairs, but you did not arrange them correctly. Remember, valence electrons that do not participate in bonding occur in pairs.

Periodic Table

Identify properties of the molecule

Plan features of the representation

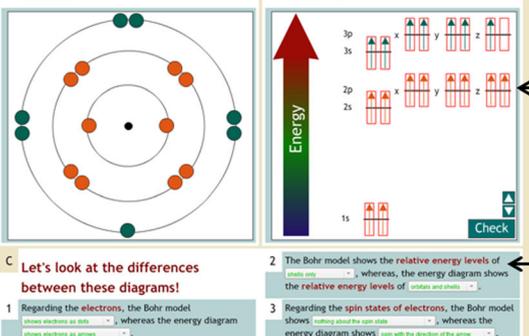
Receive feedback on interactions

Construct representations with an interactive tool

In *Chem Tutor* (Rau 2015; Rau and Wu 2015; Rau et al. 2015a, b), designed for introductory undergraduate chemistry learning, students plan and construct a graphical representation (Lewis structures), with feedback from the system

Atoms and Electrons

A Let's revisit the Bohr model for chlorine!



B Let's revisit the energy diagram for chlorine!

Hint
? No, this is not correct. Electrons in the same orbital must have opposite spin.

Periodic Table

Construct a different representation of the same atom

Receive immediate, error-specific feedback

Reflect on differences and limitations of representations

C Let's look at the differences between these diagrams!

- 1 Regarding the electrons, the Bohr model shows electrons in shells, whereas the energy diagram shows electrons in orbitals.
- 2 The Bohr model shows the relative energy levels of orbitals, whereas, the energy diagram shows the relative energy levels of orbitals and shells.
- 3 Regarding the spin states of electrons, the Bohr model shows orbitals with the spin state, whereas the energy diagram shows orbitals with the direction of the spin.

Given one representation, students construct a different kind of graphical representation of the same atom and are prompted to reflect on the differences and limitations of the two visual representations

RedBlackTree Tutor

RedBlackTree Tutor

Initial Tree

Insert: 24

Step 1

What is the current node X? 33

What rule will you apply in this step?

Color flip

Step 2

What is the current node X? 33

What rule will you apply in this step?

Color Root Black

Step 3

What is the current node X? 17

What rule will you apply in this step?

--

The top-down insertion algorithm starts from the root of the tree, and moves down one level on the left or right until it finds a null node to insert the new element. Once a null node is found what becomes the current node X?

?✓

← PreviousNext →

The *RedBlackTree Tutor* (Liew & Xhakaj, 2015; Xhakaj, 2015; Xhakaj & Liew, 2015) helps students learn an algorithm for building red-black trees, a common data structure in computer science

Tutor for collaborative learning of fractions

Equivalent Fractions

A Match the equivalent fractions.

1 Match an equivalent fraction for each fraction shown below. Make sure the circles show the same amounts before hitting submit. You and your partner can each move only half of the fractions. Discuss with your partner what the correct answers are.

$\frac{8}{10}$	$\frac{5}{9}$	$\frac{2}{7}$
----------------	---------------	---------------

$\frac{6}{7}$	$\frac{16}{24}$	$\frac{1}{4}$
---------------	-----------------	---------------


 $\frac{3}{4} = \frac{9}{12}$



 $\frac{3}{7} = \frac{6}{14}$



 $\frac{4}{6}$


? Hint

Next

Equivalent Fractions

A Match the equivalent fractions.

1 Match an equivalent fraction for each fraction shown below. Make sure the circles show the same amounts before hitting submit. You and your partner can each move only half of the fractions. Discuss with your partner what the correct answers are.

$\frac{8}{10}$	$\frac{5}{9}$	$\frac{2}{7}$
----------------	---------------	---------------

$\frac{6}{7}$	$\frac{16}{24}$	$\frac{1}{4}$
---------------	-----------------	---------------


 $\frac{3}{4} = \frac{9}{12}$



 $\frac{3}{7} = \frac{6}{14}$



 $\frac{4}{6}$


? Hint

Next

Elementary school students (grades 4 and 5) use the *Collaborative Fractions Tutor* with a partner; each partner has a different role, with a different view of the problem and different available actions (Olsen et al. 2014a, b, under review)

Tutor for Business Modeling with Google Sheets

The screenshot shows a Google Sheet titled "Alex Processing - Tutored Problem" with a sidebar for the "CTAT Tutor". The main spreadsheet displays a table of "Output" data from 1997 to 2016. The columns are: Year (yyyy), aggregate Demand (t/y), Grinder Machine (t/y), Grader Machine (t/y), Saws Machine (t/y), Sorting Equipment (t/y), Bonding Machine (t/y), Packing Machine (t/y), and Test Equipment (t/y). The data shows a general upward trend in demand over the period.

Year (yyyy)	aggregate Demand (t/y)	Grinder Machine (t/y)	Grader Machine (t/y)	Saws Machine (t/y)	Sorting Equipment (t/y)	Bonding Machine (t/y)	Packing Machine (t/y)	Test Equipment (t/y)
1997	3.91	4	5	2	9	1	2	5
1998	5.06	4	5	2	10	1	3	6
1999	6.05	4	4	3	11	1	4	7
2000	7.77	5	7	3	13	2	5	8
2001	10.03	6	8	4	15	2	5	9
2002	12.01	7	11	4	16	3	7	10
2003	14.61	7	12	5	19	3	7	11
2004	17.39	8	15	6	20	3	8	12
2005	20.82	9	16	6	23	5	9	14
2006	23.92	10	19	7	24	5	10	14
2007	27.24							
2008	31.9							
2009	36.04							
2010	40.73							
2011	45.22							
2012	50.19							
2013	55.36							
2014	62.02							
2015	68.03							
2016	73.29							

The sidebar contains the following text: "In the next step you will want to calculate the productivity of other machine types by copying this cell to other cells, so you should fix the aggregate demand column by using a '\$'." It includes "Previous" and "Next" buttons, a "Help" button with a question mark, and a "Done" button with a checkmark.

An example-tracing tutor build by McLaren and colleagues, embedded within Google Sheets, provides guidance with business modeling problems

Fractions Tutor version that supports Sense Making, Induction/Refinement, and Fluency Building

A new version of the Fractions Tutor (Doroudi et al., 2015) has activities targeting each of the three main learning mechanisms identified in the Knowledge-Learning-Instruction framework (KLI; Koedinger et al., 2012) induction and refinement (IR) (top), sense-making (SM) (middle), and fluency (F) (bottom)

1 Compare these fractions using the cross-multiplication strategy.

2 Since 40 is less than 45, the fraction on the left is less than the one on the right. So, we know:

A When comparing fractions we need to determine if they are equal to, greater than, or less than each other. Let's use a procedure called cross multiplication!

B How does this make sense?

1 Correctly complete the sentences to the right by dragging and dropping the phrases below.

less than	numerator	=
denominator	10	equivalent to
15	12	greater than

4/5 is _____ 2/3 because when cross multiplying, the product on the left is _____ the product on the right. This makes sense because cross multiplying finds the _____ for the fractions that are equivalent to our first fractions and share a common denominator of _____

Submit

A Can you order the following fractions, smallest to largest?
Drag and drop fractions to reorder them.

1 $\frac{5}{17} < \frac{5}{12} < \frac{5}{6}$ Check
smallest middle largest

2 $\frac{1}{4} < \frac{1}{3} < \frac{1}{2}$ Check

3 $\frac{2}{21} < \frac{3}{5} < \frac{3}{4}$ Check

4 $\frac{1}{12} < \frac{1}{8} < \frac{1}{2}$ Check

Tutors for Guided Invention activities

A tutor by Roll et al. (2010) provides guidance during invention activities

CTAT was used to create a tutor for guided invention activities with a Wizard of Oz interface (Chase et al., 2015); CTAT's collaborative tutoring facility enabled separate roles and capabilities for student and wizard.

The Article Tutor

7. I bought ____ new TV last month.

Which article (a, an, the or no article) best completes the sentence?

- What rule or feature is most important for deciding which article to use? -

- What rule or feature is most important for deciding which article to use? -

- The noun has already been mentioned.
- The noun is a single letter or number.
- The noun is non-count and has a general meaning.
- The noun is plural and has a general meaning.
- The noun is modified with the word 'same'.
- The noun is singular and has a general meaning.

?

Hint

← Previous Next →