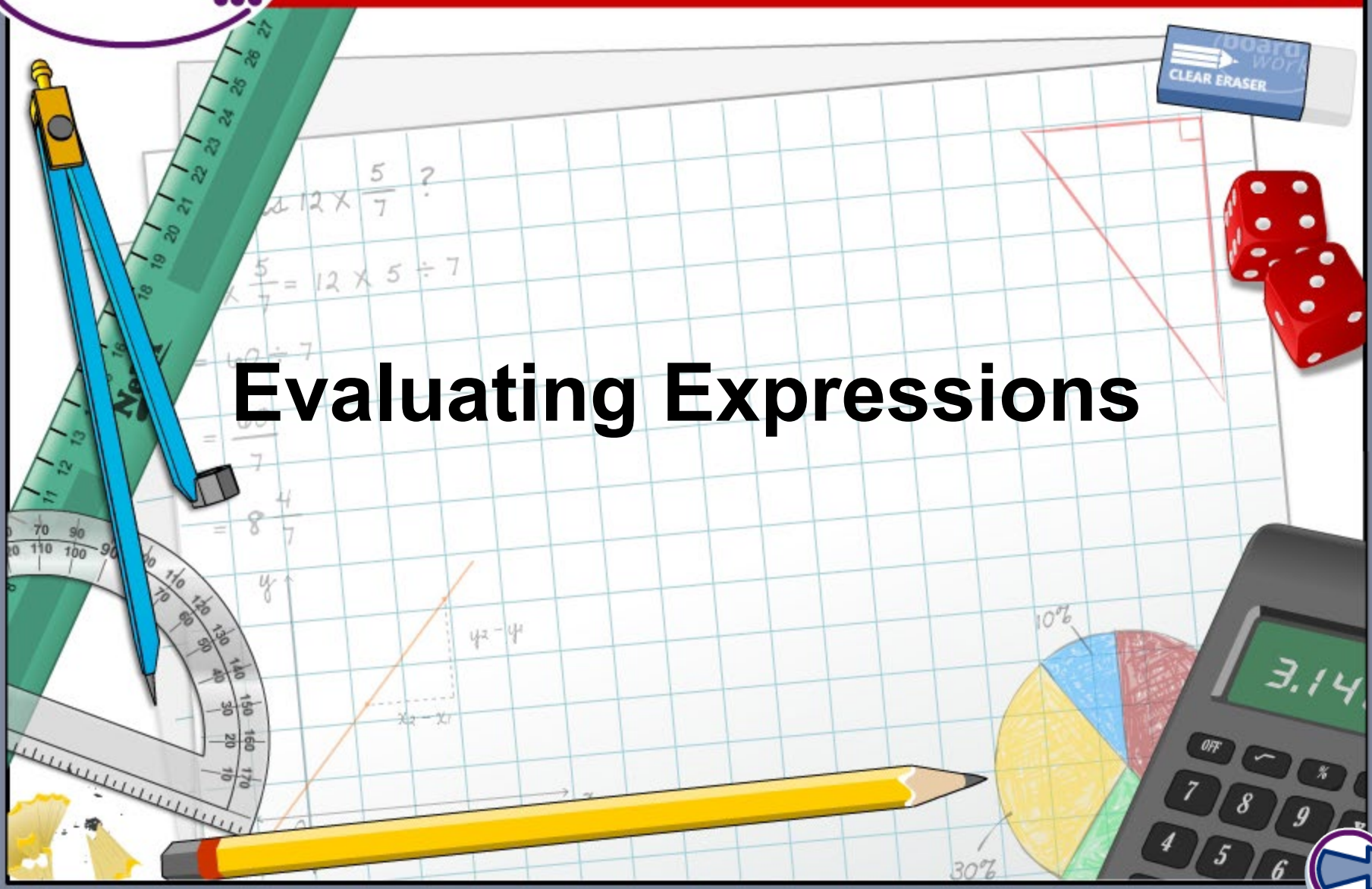

Evaluating Expressions

Information

Common core icons

This icon indicates a slide where the Standards for Mathematical Practice are being developed. Details of these are given in the Notes field.

Slides containing examples of mathematical modeling are marked with this stamp.

This icon indicates an opportunity for discussion or group work.

The **Standards for Mathematical Practice** outlined in the Common Core State Standards for Mathematics describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

These are:

1) Make sense of problems and persevere in solving them.

2) Reason abstractly and quantitatively.

3) Construct viable arguments and critique the reasoning of others.

4) Model with mathematics.

5) Use appropriate tools strategically.

6) Attend to precision.

7) Look for and make use of structure.

8) Look for and express regularity in repeated reasoning.

This icon indicates that the slide contains activities created in Flash. These activities are not editable.

This icon indicates teacher's notes in the Notes field.

Order matters

Sam and Dominic are both asked to calculate 30 – 18 ÷ 6.

Sam thinks the answer is 2.

Dominic thinks the answer is 27.

Which student is correct?

Dominic is correct:
18 ÷ 6 = 3
30 – 3 = **27**

What did Sam do wrong?

PEDMAS

Order of operations

P

E

D

M

A

S

We can use PEDMAS to help us remember the right order for complicated calculations.

Press the letters on the left to learn more about PEDMAS.

Using a calculator

We can use a calculator to evaluate more difficult calculations.

For example:

$$\frac{\sqrt{(5^2 + 7^2)}}{7 - 5}$$

What combination of buttons, in which order, would you use to evaluate this expression?

= 4.3 (to nearest tenth)

How can we check answers given by a calculator?

Using PEDMAS

Q1/5 Calculate the value of 56 ÷ 7 – 5

Press the "=" button to show the work step by step.

- 121
- 7.3
- 3
- 28

Can you define the words operation, number and variable?

An operation is a mathematical process. The most common operations are add, subtract, multiply and divide (+, -, ×, ÷).

A **number** describes an **amount**.

$$x + 5$$

Variables act as **placeholders** when we know what operations we want to perform, but we don't know what our input amounts are.

What is an expression?

In math, an expression is a collection of **numbers**, **variables** and **operators** that combine to give a value.

Amy is 3 inches taller than Dale. How can we describe Amy's height, in terms of Dale's height?

The expression for Amy's height, in inches, is "Dale's height + 3".

In this expression, Amy's height is the **value** and Dale's height is the **variable**.

Introduction to expressions

Many spoken phrases translate directly into expressions.

What is the expression for each of these phrases?

Phrase in words	Expression
An amount plus eight	$x + 8$
Four less than an amount	$x - 4$
Half of an amount	$x \div 2$ or $\frac{x}{2}$

An expression is a way of describing an **amount**.

An expression never contains an equals sign (=).

Parts of expressions

What do you notice about this expression?

$$2x - \frac{6(5 + y)}{4}$$

Expressions are made up of different parts.

Some parts contain other, smaller parts.

When we evaluate expressions, we need to consider each part individually.

How many parts can you see?

Some definitions

coefficient

quotient

produ

sum

facto

term

Press **start** to begin.

Press each mathematical word to learn about the mathematical terms

start

Match the words

Match these words to the correct example.

product	$5b$
sum	7×9
coefficient	$\frac{x+2}{3-x}$
quotient	$x + 4$

Cake baking

Ying wants to set up a cake baking business. She has written an expression, based on the cost of ingredients, to calculate the price she should charge for each cake.

The price is given by the expression:

$$3(\text{butter} + \text{flour}) + 2 \times \text{eggs}$$

Calculate the price she should charge.

$$3(1.5 + 2) + 2 \times 0.5$$

$$3(3.5) + 2 \times 0.5$$

$$10.5 + 1$$

$11.50

Bungee jumping

Erik is going bungee jumping. This is the expression for the length of rope needed, in terms of Erik's height and weight:

Erik:
Height: 67 inches
Weight: 90 lbs

$$(\text{weight} - 55)^2 + \text{height}$$

What length of rope does Erik need?

$$(90 - 55)^2 + 67$$

$$(35)^2 + 67$$

$$1225 + 67$$

1292 inches

Test your knowledge!