An Overview of the Common Core State Standards (CCSS)

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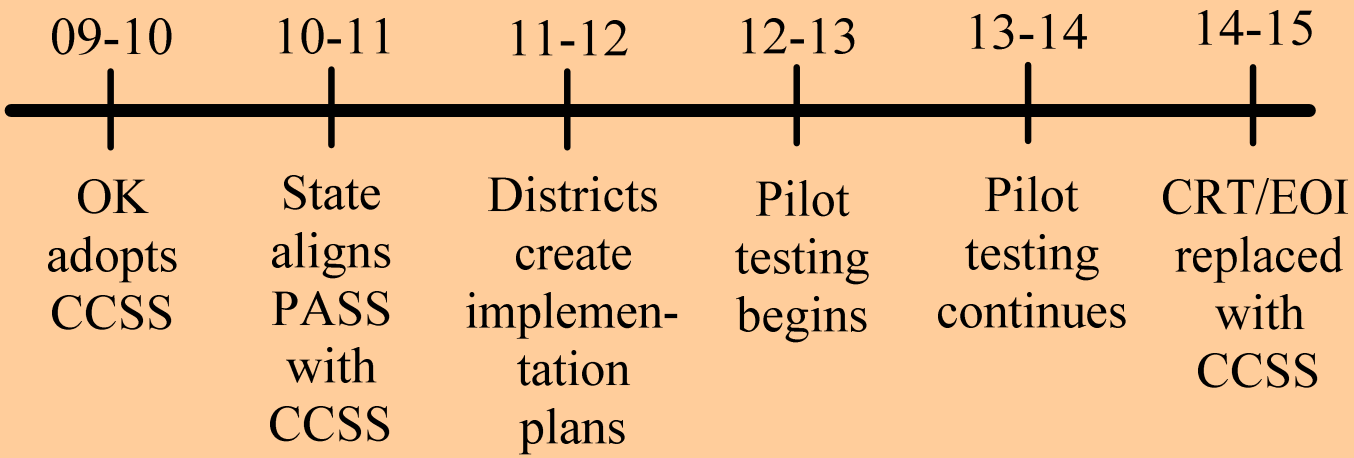
Background

- Proposed by the National Governors' Association (NGA) and the Council for Chief State School Officers (CCSSO) in 2009.
- 48 States and US Territories have signed on to adopt the Standards.
- Common Core Assessments now being developed by three consortia of states (OK is a member of two of them).

Implementation Timeline



Standards for Mathematical Practice

Standards for Mathematical Content

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Standards for Mathematical Practice

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.

Standards for Mathematical Content

An Example from the
Operations & Algebraic Thinking Strand

Solve two-step word problems using four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

Standards for Mathematical Content

K-8 Coherent strands woven throughout

High School

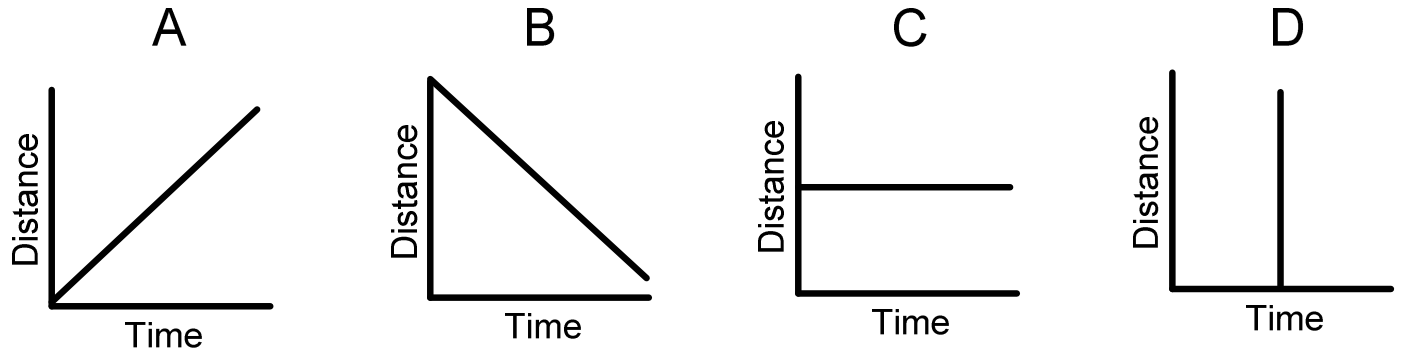
- Number & Quantity
- Algebra
- Functions
- Modeling
- Geometry
- Statistics & Probabilities

Novice Level Tasks
(Little or no support needed)

MP 2: Reason abstractly & quantitatively
MP 6: Attend to precision

15a. Jane, Maria, and Ben each have a collection of marbles. Jane has 15 more marbles than Ben, and Maria has 2 times as many marbles as Ben. All together they have 95 marbles. Find how many marbles Maria has.

15b. Dave sold 40 tickets for a concert. He sold x tickets at \$2 each and y tickets at \$3 each. He collected \$88. Write down two equations connecting x and y. Solve these two equations to find how many of each kind of ticket he sold.



These graphs show the distances traveled from home.

Which graphs go with each of the following statements?

The car is not moving. _____
The car is traveling at a steady speed. _____

Each t-table represents a function. Label each one either *linear* or *non-linear*.

x	y
1	6
2	9
3	12
4	15

_____

x	y
1	56
2	28
3	14
4	7

_____

Apprentice Level Tasks
(With scaffolded support)

MP 3: Construct viable arguments and critique the reasoning of others.
MP 7: Look for and make use of structure.

GIANTBURGERS

This problem gives you the chance to:
- apply numbers to a practical problem
- work with large numbers

This headline appeared in a newspaper.

Every day 7% of Americans eat at Giantburger restaurants

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Every day 7% of Americans eat at Giantburger restaurants

Decide whether this headline is true using the following information.

- There are about 8×10^3 Giantburger restaurants in America.
- Each restaurant serves about 2.5×10^3 people every day.
- There are about 3×10^8 Americans.

Explain your reasons and show clearly how you figured it out.

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Sale!

This problem gives you the chance to:

- work with sales discount offers and percents

The following price reductions are available.

Two for the price of one	**Buy one and get 25% off the second**
Buy two and get 50% off the second one	**Three for the price of two**

1. Which of these four different offers gives the biggest price reduction?

_____

Explain your reasoning clearly

_____

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2. Which of these four different offers gives the smallest price reduction?

Explain your reasoning clearly.

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T-shirt Sale

This problem gives you the chance to:

- calculate total costs
- calculate percentage savings

T-shirt Sale

Any 3 T-shirts for $14.50

1. Tom bought these three T-shirts at the sale price of $14.50.
   How much money did he save compared to the original total price of the T-shirts?
   Show your calculations. $ _____

2. What percentage of the original total price did Tom save? _____%

   Show your work.

3. Harry also paid $14.50 for three T-shirts at the sale. The sale price saved Harry 30% of the original price of the three T-shirts.

   What is the original total price of his three T-shirts? $_____

   Show your calculations.

Yogurt

This problem gives you the chance to:

- use fractions and percents
- use units
- do calculations in context

A food company produces yogurt in half-cup tubs.

2 cups = 1 pint
2 pints = 1 quart
4 quarts = 1 gallon

1. The tubs of yogurt are sold for 75¢ each.

   Twenty percent of this is profit for the food company.

   How much profit does the company make on each tub? ……..

   Show your work.

The machine that fills the half-cup tubs with yogurt runs 10 hours a day for 5 days a week. It fills 1600 tubs an hour.

2. How many gallons of yogurt are needed to fill 1600 tubs? ……..

   Show your calculations.

3. How many gallons of yogurt are needed each week? ……

   Show your work.

4. What is the percent increase in production if the machine runs for 7 days a week instead of 5 days a week? ……

   Show how you figured it out.

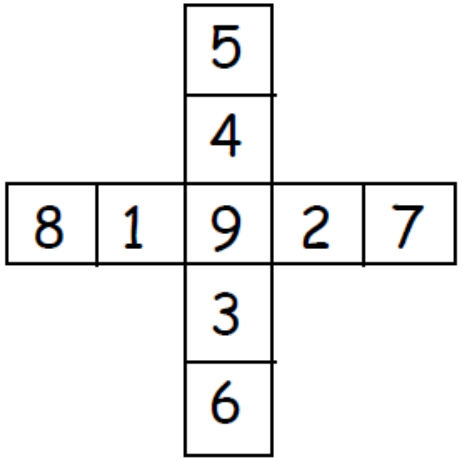
Apprentice Level Tasks
(With scaffolded support)

MP 3: Construct viable arguments and critique the reasoning of others.
MP 7: Look for and make use of structure.

MAGIC CROSSES

There are two rules for making Magic Crosses:
- They must contain all the numbers from 1 to 9
- The vertical total must equal the horizontal total.

This is called the **Magic Total**.



In the Magic Cross shown here, for example, the Magic Total is 27 because:
the vertical total is 5+4+9+3+6 = 27;
the horizontal total is 8+1+9+2+7 = 27.

1. Which Magic Totals are possible?
   Which are impossible?
   Prove that you are right.

2. Make up a new problem like this and solve it.

   For example: Arrange all the numbers from 1 to 9 in the boxes so that the total along each line is equal. Call this the Magic Total.
   What different values can this Magic Total take?

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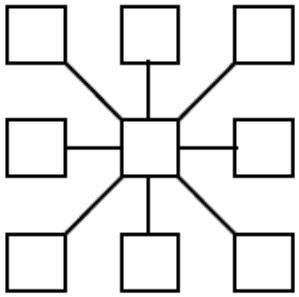
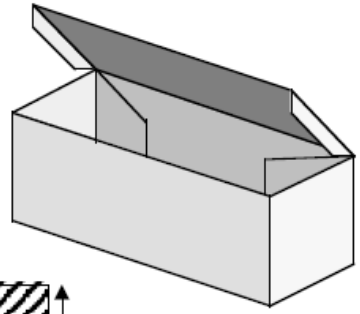
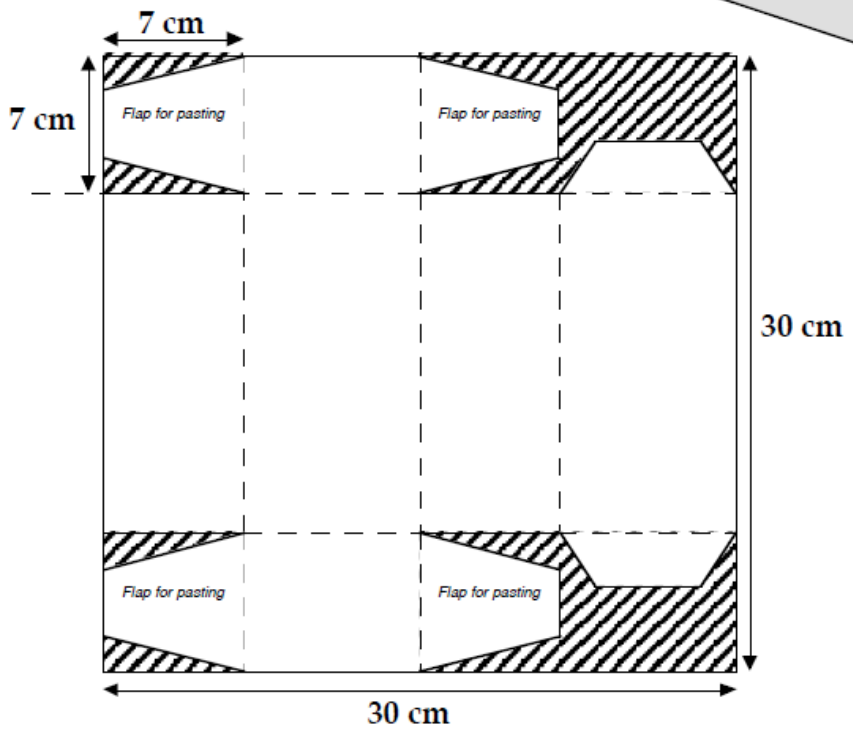
What different values can this Magic Total take?



STRAWBERRY BOXES

A grocer wants to sell strawberries in small boxes.
He wants to make the boxes from square card 30 cm long and 30 cm wide as shown below:





The shaded areas are cut away and the rest is folded along the dashed lines.
The sides are folded up and stuck together using flaps.
The lid has two flaps which are not glued.

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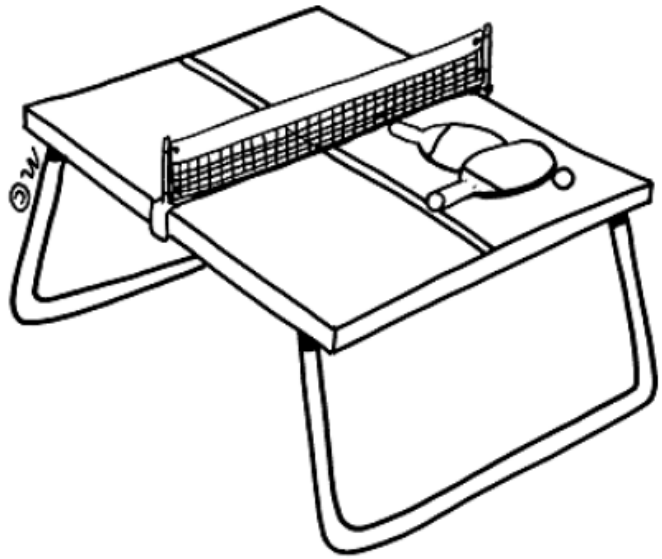
1. Calculate the volume of this box.

2. Suppose he starts with the same square of card, but changes the 7cm to a different measurement. What is the largest volume he can make the box?

A TABLE TENNIS TOURNAMENT



You have the job of organising a table tennis league.

- 7 players will take part
- All matches are singles.
- Every player has to play each of the other players once.
- There are four tables at the club.
- Games will take up to half an hour.
- The first match will start at 1.00pm.

Plan how to organise the league, so that the tournament will take the shortest possible time. Put all the information on a poster so that the players can easily understand what to do.

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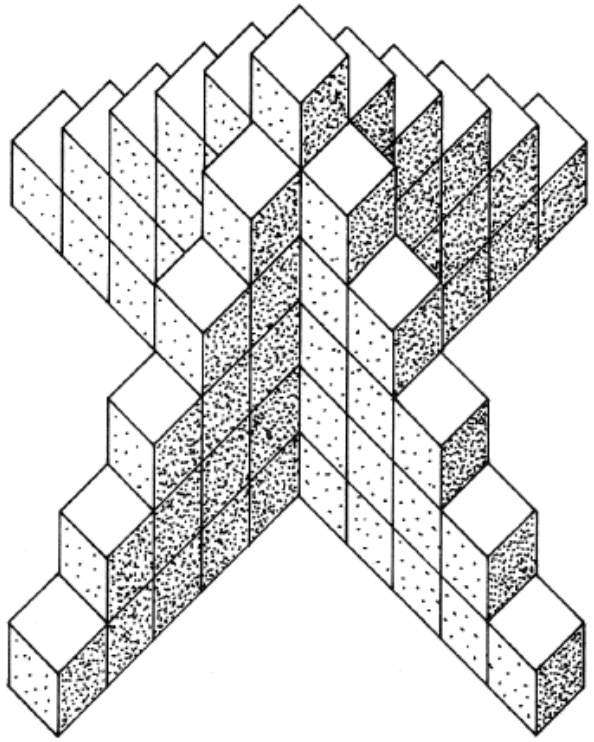
SKELETON TOWER



1. How many cubes are needed to build this tower?
2. How many cubes are needed to build a tower like this, but 12 cubes high?
   Explain how you work out your answer.
3. How would you calculate the number of cubes needed for a tower n cubes high?

CROWN

The King asks Archimedes if his crown is made from pure gold.
He knows that the crown is either pure gold or it may have some silver in it.

Archimedes works out that the volume of the crown is 140 cm^3
and that its mass is 2 kilograms.

He also knows that 1 kilogram of gold has a volume of about 50 cm^3 and
1 kilogram of silver has a volume of about 100 cm^3

1. Is the crown pure gold?
   Explain how you know.

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2. If the crown is not pure gold, then how much silver is in it?
   Show all your working.

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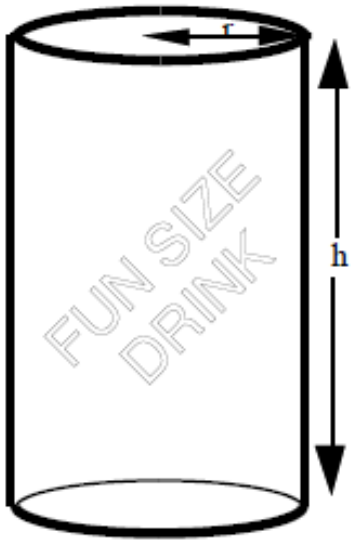
BESTSIZE CANS



The Fresha Drink Company is marketing a new soft drink.
The drink will be sold in a can that holds 200 cm^3.

In order to keep costs low, the company wants to use the smallest amount of aluminum.

Find the radius and height of a cylindrical can which holds 200 cm^3 and uses the smallest amount of aluminum.

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