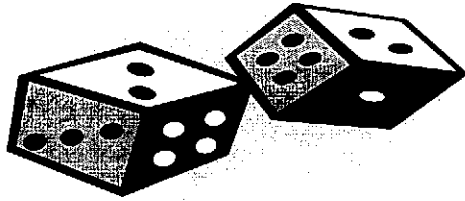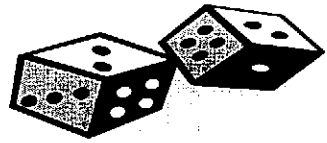# THINK DOTS

Handout

© ThinkDOTS

- After a conceptual unit has been presented and students are familiar with the ideas and associated skills, "Think DOTS" is an excellent activity for students to construct meaning for themselves about the concept they are studying. The instructor first defines readiness levels, interests or learning styles in the class, using on-going assessment.
- Each student is given a set of activity cards on a ring, a die, and an activity sheet. Each student rolls the die and completes the activity on the card that corresponds to the dots thrown on the die. Each student then completes the activity on the activity sheet.

Materials:

1. 8 ½ x 11 inch paper
2. Hole punch
3. Metal or plastic rings
4. Dice
5. Scissors
6. Markers or dots
7. Laminating materials

© ThinkDOTS

Construction:

1. For each readiness level, six activities should be created.

2. On an 8 ½ x 11 inch page divided into six sections (this can be done easily on the computer by creating a 2 x 3 cell table and saving it as a template), the activities should be written or typed in each section.

3. On the back of each page, dots corresponding to the dots on the faces of a die should be either drawn or affixed (you can use Avery adhesive dots) on each of the six sections of the page.

4. The pages should be laminated for durability.

5. Then each page should be cut into the six sections.

6. Use a hole punch to make holes in one corner or in the top of each activity card.

7. Use a metal or plastic ring to hold each set of six cards together (you can get 100 metal rings from Office Suppliers in Roanoke for $9.00)

8. Create an Activity Sheet to correspond to the lesson for easy recording and management.
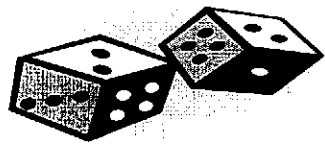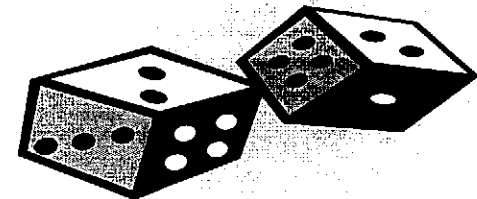
© ThinkDOTS

Suggestions:

1. Use colored paper and/or colored dots to indicate different readiness levels, interests or learning styles.

2. Have students work in pairs.

3. Let students choose which activities – for example: roll the die and choose any three; create complex activities and have students choose just one to work on over a number of days.

4. After students have worked on activity cards individually, have them come together in groups by levels, interest or learning style to synthesize
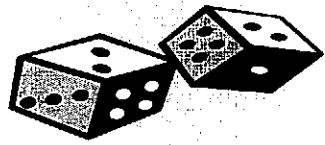
© ThinkDOTS

Application:

1. Use "ThinkDOTS" to lead students into deeper exploration of a concept.

2. Use "ThinkDOTS" for review before assessment.

3. Use "ThinkDOTS" as an assessment.

THINK DOTS

Created by Kay Brimijoin (99')

NAME _____DATE_____

LESSON:

ACTIVITY 1:

ACTIVITY 2:
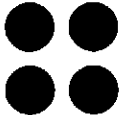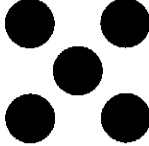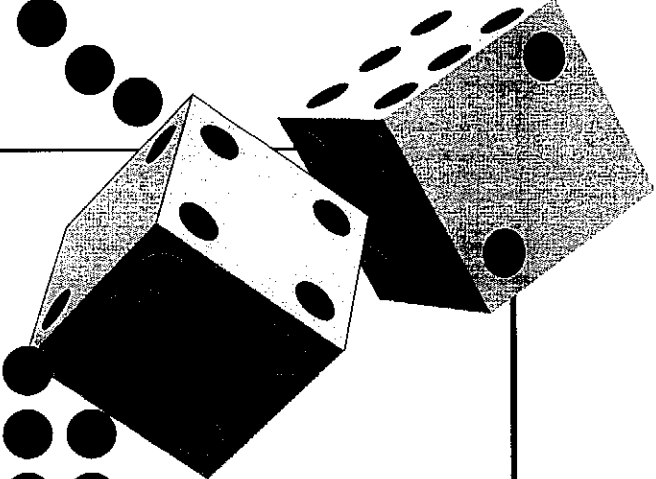
ACTIVITY 3:

ACTIVITY 4:

ACTIVITY 5:

ACTIVITY 6:

THINK DOTS

Describe…	Apply…	Question…
Argue for or against…	Satirize…	

Space ThinkDOTS   Judy Rex,
3rd - 4th Multiage   Scottsdale, AZ

KNOW:

- Key vocabulary – astronomer, atmosphere, axis, constellation, gravity, moon, orbit, phase, planet, revolution, rotation, solar system, star (X Factor: crater, eclipse, flare, galaxy, meteorite, nebula, sunspot)
- Components of solar system
- Physical characteristics of the Sun, moon, and Earth
- Four seasons and their characteristics
- Objects that move in the sky

UNDERSTAND:

- The parts of the solar system influence one another and appear to be a unified whole.
- The Sun, Moon and Earth have different physical characteristics and regular movements that result in daily, monthly, and yearly patterns.
- Scientific investigation of the solar system has an impact on human activity and the environment and is a result of the contributions of many people.

Space ThinkDOTS
3rd - 4th Multiage

DO:

- Identify the solar system and the planets in relationship to the sun
- Describe and compare the physical characteristics of the Sun, Moon,m and Earth
- Identify objects that move in the sky
- Describe patterns of change vidsible in the sky over time
- Observe and record phases of the moon, position of constellations
- Identify the seasons and their characteristics
- Distinguish between revolution and rotation and demonstrate the difference
- Use a variety of resources, including the itnernet, to complete research
- Work cooperatively in a group
- Plan, design, conduct, and report on the conclusions sf basdicv experiments
- Set goals and evaluate progress
- Organize and present information

Judy Rex,
Scottsdale, AZ

Build a model of the solar system and label its parts. Show why it is a system.

Illustrate the key vocabulary for our space study. Write the word under each picture. Be sure to check your spelling.

Create a mobile to show the 4 major phases of the moon. Be sure to put them in the order in which they occur.

Plan a skit that will show you understand the characteristics of the four seasons and when they happen. Be ready to answer questions from the audience.

Judy Rex,
Scottsdale, AZ

Use words, pictures, and color to complete attribute webs for the Sun, the Moon, and the Earth. List the similarities and differences you find.

You are an astronomer and have discovered another planet in our solar system. Describe the planet's location and attributes. Draw a picture and name your planet.

Draw and label a map of our solar system to scale. Describe why it is considered a system.

Create an illustrated glossary for a book about how the objects in our solar system move in space and are related to one another. Use the key vocabulary from our space study. Be sure to check your spelling!

Demonstrate that you know all the phases of the moon and why they occur.

Prove why we have seasons. Create a way to show us what would happen without the rotation and revolution of the Earth.

Judy Rex, Scottsdale, AZ

You are from another galaxy going to explore the solar system's Sun, Earth, and Moon. What will you take with you? What will you find there? What useful information will you take back to your galaxy? Share your findings with the earthlings in our class.

You are an astronomer and have discovered another space system. Find a way to tell us all about it and what makes it a system.

Develop a way to categorize the planets in our solar system and their relationship to the sun. Why is it considered to be a system?

If you were going to teach a unit on space, what key vocabulary would you want your students to understand? List the words, their meanings, and how you would teach each one.

Demonstrate that you know all the phases of the moon and why they occur. How does the Earth's moon compare to the moons of other planets?

Compare and contrast the movement in space that causes day and night to the movement that creates the seasons.

Judy Rex,
Scottsdale, AZ

You are an intergalatic travel agent. Create a travel brochure for our solar system's Sun, Moon, and Earth. Be sure to include all important information about these destinations.

If you were an astronomer, predict what your job would be like during the next 10 years. What might you discover?

Multiplication Think Dots
Struggling to Basic

- It's easy to remember how to multiply by 0 or 1! Tell how to remember.

- Jamie says that multiplying by 10 just adds a 0 to the number. Bryan doesn't understand this, because any number plus 0 is the same number. Explain what Jamie means, and why her trick can work.

- Explain how multiplying by 2 can help with multiplying by 4 and 8. Give at least 3 examples.

- We never studied the 7 multiplication facts. Explain why we didn't need to.

- Jorge and his _____ friends each have _____ trading cards. How many trading cards do they have all together? Show the answer to your problem by drawing an array or another picture. Roll a number cube to determine the numbers for each blank.

- What is _____ X _____? Find as many ways to show your answer as possible.

Multiplication Think Dots
• **Middle to High Level**

• There are many ways to remember multiplication facts. Start with 0 and go through 10 and tell how to remember how to multiply by each number. For example, how do you remember how to multiply by 0? By 1? By 2? Etc.

• There are many patterns in the multiplication chart. One of the patterns deals with pairs of numbers, for example, multiplying by 3 and multiplying by 6 or multiplying by 5 and multiplying by 10. What other pairs of numbers have this same pattern? What is the pattern?

• Russell says that 7 X 6 is 42. Kadi says that he can't know that because we didn't study the 7 multiplication facts. Russell says he didn't need to, and he is right. How might Russell know his answer is correct? Give 2 different explanations.

• Max says that he can find the answer to a number times 16 simply by knowing how to multiply by 2. Explain how Max can figure it out, and give at least two examples.

• Alicia and her _____ friends each have _____ necklaces. How many necklaces do they have all together? Show the answer to your problem by drawing an array or another picture. Roll a number cube to determine the numbers for each blank.

• What is _____ X _____? Find as many ways to show your answer as possible.

Fraction Dots

Nanci Smith

Describe how you would solve $\frac{1}{5}+\frac{3}{5}$ or roll the die to determine your own fractions.

Explain the difference between adding and multiplying fractions,

Compare and contrast these two problems:

☐☐ + ☐☐☐

and

$\frac{1}{3}+\frac{1}{2}$

Create a word problem that can be solved by $\frac{1}{3}+\frac{2}{5}=\frac{11}{15}$

(Or roll the fraction die to determine your fractions.)

Describe how people use fractions every day.

Model the problem ___ + ___ .

Roll the fraction die to determine which fractions to add.

Fraction Dots

Nanci Smith

●

Susan has ____ of a pizza and Jayni has ____ of a pizza. How much pizza do they have together? Is this less, equal to or more than a whole pizza? Roll the fraction die to determine the fractional amounts Susan and Jayni have.

●
 ●

Explain why you need a common denominator when adding fractions.

●
 ●
  ●

Model the fraction ____ in three different ways. Roll the fraction die to determine the fraction to be modeled.

●●
●●

Explain the difference between a numerator and a denominator.

● ●
● ●

Demonstrate how to find a common denominator for the fractions ____ and ____. Roll the fraction die to determine which fractions to use.

●●
●●
●●

Which fraction is larger: ____ or ____? Use a model to prove you are correct. Roll the fraction die to determine which fractions to use.

Fraction Dots

Describe how you would solve $\frac{2}{13}+\frac{3}{7}+\frac{1}{91}$ or roll the die to determine your own fractions.

Explain why you need a common denominator when adding fractions, But not when multiplying. Can common denominators ever be used when dividing fractions?

Compare and contrast these two problems: $\frac{1}{3}+\frac{1}{2}$ and $\frac{3}{7}+\frac{1}{7}$

Create an interesting and challenging word problem that can be solved by ___ + ____ - ____ . Roll the fraction die to determine your fractions.

A carpet-layer has 2 yards of carpet. He needs 4 feet of carpet. What fraction of his carpet will he use? How do you know you are correct?

Diagram and explain the solution to ___ + ___ + ___ . Roll the fraction die to determine your fractions.

Nanci Smith

Algebra ThinkDOTS

Level 1:

1. a, b, c and d each represent a different value. If a = 2, find b, c, and d.

$$a + b = c$$
$$a - c = d$$
$$a + b = 5$$

2. Explain the mathematical reasoning involved in solving card 1.

3. Explain in words what the equation $2x + 4 = 10$ means. Solve the problem.

4. Create an interesting word problem that is modeled by

$$8x - 2 = 7x.$$

5. Diagram how to solve $2x = 8$.

6. Explain what changing the "3" in $3x = 9$ to a "2" does to the value of x. Why is this true?

a, b, c and d each represent a different value. If a = 2, find b, c, and d. $a + b = c$ $a - c = d$ $a + b = 5$	Explain the mathematical reasoning involved in solving card 1.	Explain in words what the equation 2x + 4 = 10 means. Solve the problem.
Create an interesting word problem that is modeled by 8x − 2 = 7x.	Diagram how to solve 2x = 8.	Explain what changing the " 3 " in 3x = 9 to a "2" does to the value of x. Why is this true?

Think Dots
Title: Algebra   level 1

Algebra ThinkDOTS

Level 2:

1.   a, b, c and d each represent a different value. If a = -1, find   b, c,   and d.

$$a + b = c$$
$$b + b = d$$
$$c - a = -a$$

2.   Explain the mathematical reasoning involved in solving   card 1.

3.   Explain how a variable is used to solve word problems.

4.   Create an interesting word problem that is modeled by

$$2x + 4 = 4x - 10.$$ Solve the problem.

5.   Diagram how to solve $3x + 1 = 10$.

6.   Explain why $x = 4$ in $2x = 8$, but $x = 16$ in $\frac{1}{2} x = 8$. Why   does this make sense?

a, b, c and d each represent a different value. If a = 1, find b, c, and d. $$a + b = c$$ $$b - b = d$$ $$c + a = -a$$	Explain the mathematical reasoning involved in solving card 1.	Explain how a variable is used to solve word problem.
Create an interesting word problem that is modeled by 2x + 4 = 4x - 10. Solve the problem.	Diagram how to solve 3x + 1 = 10.	Explain why x=4 in 2x = 8, but x=16 in ½ x = 8. Why does this make sense?

Think Dots

Title: Algebra level 2

Algebra ThinkDOTS

Level 3:

1. a, b, c and d each represent a different value. If a = 4, find b, c, and d.

$$a + c = b$$
$$b - a = c$$
$$cd = -d$$
$$d + d = a$$

2. Explain the mathematical reasoning involved in solving card 1.

3. Explain the role of a variable in mathematics. Give examples.

4. 3.Create an interesting word problem that is modeled by
    . Solve the problem.

5. Diagram how to solve 3x + 4 = x + 12.

6. Given $ax = 15$, explain how x is changed if a is large or a is small in value.

a, b, c and d each represent a different value. If a = 4, find b, c, and d. $$a + c = b$$ $$b - a = c$$ $$cd = -d$$ $$d + d = a$$	Explain the mathematical reasoning involved in solving card 1.	Explain how a variable in mathematics. Give examples.
Create an interesting word problem that is modeled by . Solve the problem.	Diagram how to solve $3x + 4 = x + 12$.	Given $ax = 15$, explain how x is changes if a is large or a is small in value.

Think Dots

Title: Algebra   level 3

Create an ad for a good that Ancient Greece and Rome did NOT trade with Egypt. Make your ad convincing enough that an Egyptian will want to buy your good.	Illustrate, explain, video or record these definitions (in your own words): Interdependence Economic Specialization Government Services Taxation or Taxes Opportunity Cost Scarcity Price Savings Investments	Could you live without goods, service or money? Defend your position.
Research goods and services in Greece, Rome, or Jamestown today. Compare and contrast with goods and services in those places long ago.	Create a map of Europe and Jamestown that illustrates the concept of interdependence between the two. Be sure to include a key of any symbols used.	Pretend you are running for office. Defend raising taxes for a government service of your choice.

Research what goods are traded between Greece and Rome and Egypt today. Compare and contrast with goods that were traded long ago.	Illustrate, explain, video or record these definitions (in your own words): Interdependence Economic Specialization Government Services Taxation or Taxes Opportunity Cost Scarcity Price Savings Investments	What kinds of choices do you and your family make based on goods, services, and savings? Why?
Using a Venn diagram, compare and contrast goods and services produced in Greece, Rome, or Jamestown. Choose two places to compare.	Use a storyboard to create a story about what happens to a bale of tobacco and a barrel of peanuts when they leave the farmlands of Jamestown and head for Europe. Explain what happens and why.	Create 3 fib game cards listing government services paid for by taxes. Add a question on each card asking why the fib is a fib and why taxes wouldn't be used to pay for it.

What goods did Ancient Greece and Rome trade with Egypt? Illustrate and label and explain why they traded each good.	Record or write a story about a French cloth maker and a Jamestown farmer. Tell how they depend on each other.	Name two goods and services that you depend on today. How do you get them?
On a chart, list the goods and services produced in Greece, Rome, and Jamestown long ago.	Illustrate, explain, video or record these definitions (in your own words): Interdependence Economic Specializations Government Services Taxation or Taxes Opportunity Cost Scarcity Price Savings Investments	Using pictures from magazines, creates a collage of government services that you would be willing to pay taxes for.

Why do you think scientists used the term "cloud" to describe the position of electrons in an atom?	How do the atomic numbers in the periodic table change from the top to the bottom? From left to right across the table?	Share two ways that scientists study atoms. Suggest any new ways you might think of.	What is the correct symbol for the element helium? Research the history of this element and create a timeline showing what elements were discovered just before and after helium.
Suppose you were given some sugar cubes, a grinder, some water, a pan, and a hot plate. What physical and chemical changes could you make in the sugar?	Predict as many properties for potassium as you can. To make your predictions, look at the information in the box for this element and consider its location on the periodic table.	How are physical and chemical properties different? Why?	Name three types of physical changes. Create alist with at least two examples of each that are different from the examples in the book.
There are 3 jars in the front of the room. Each has a substance with a strong odor. One is a solid, one is a liquid and one is a gas. Which odor would students in the back of the room smell first? Why?	Carbon is atomic number 6. How are 2 carbon atoms with mass numbers of 12 and 14 different? Why are these atoms called isotopes?	What does the periodic table tell us about calcium? How can this help us in our everyday lives?	Which is higher, an element's atomic number or its mass number? Why?

ThinkDOTS
5th Grade Poetry

Visit: www.emule.com/poetry/ and click on the link for the top ten poems. Read several poems and select one that you really like. Print out the poem and write a short explanation on why you enjoyed this poem. Look up unfamiliar words. Explain what you believe the poem to mean.

Make a great big list (30 or more) of pairs of words that rhyme. Write a poem using one of the pair of words you have chosen. You can use any form of poetry you desire.

Remember a quatrain is a poem written in four verses with different rhyme patters. There are many ways to write a quatrain: a,a,b,b; a,a,a,a; a,b,c,b; or a,b,a,b. Your task is to write two quatrains. Be creative and as always try to place meaning into your poetry.

Poetry is a lot of fun! One of the craziest and funniest forms of poetry is a limerick. Edward Lear is credited for popularizing this form of poetry. Now lets see how you can do. Remember that lines 1, 2, and 5 rhyme and lines 3 and 4 rhyme. Go to it!

A skill of some of the best writers is to use metaphor to add description to a story. Remember that metaphor is used to compare two dissimilar objects that are alike in some way. Example: Music is the honey of the human spirit. Find several examples of metaphor using classroom books and write three examples of your own.

Now it is time to play free style poetry. Use this opportunity to write a poem about a topic of your choice using free stylepoetry. Here are some topic ideas: Emotions   School   Friendship

Eric Soskil, Conway School, St. Louis, MO

ThinkDOTS
5th Grade Poetry *(advanced)*

Make a great big list (30 or more) of possible topics you could write a poem about. Choose one topic to write a poem using any style of poetry you wish.

Alliteration is a fun and creative style of writing. Remember that alliteration is the repetition of the first consonant or vowel sound. Example: Franky's family is frantic about frogs. Your task is to write a short story using alliteration. Try to see how long you can write using alliteration. Work hard to make your story make sense.

A couplet is made up or two lines that rhyme. A complete idea may be expressed in a couplet or a long poem may be made up of many couplets. Your task is to find 2 examples of good couplets and then to write an original couplet. You may use reference materials in the classroom or search the Internet. The emphasis is on meaning not humor.

Visit: www.nesbitt.com/poetry and click on the link for poems. Read several poems and select one that you really like. Print out the poem and write a short explanation on why you enjoyed this poem. Would you recommend others read the poem? Why?

Write an autobiographical poem about yourself. Ask your teacher for a copy of the outline and share a little about your self. Who knows? You may learn something about yourself

Ask your teacher for a copy of the poem **"Alone"** by Walter de la Mare. Read the poem carefully and write a reflection based on your feelings about the poem. Do you think this poem is sad? Why or why not?

Prejudice	Scapegoating	Articles
Discuss how prejudice and discrimination are not only harmful to the victim, but also to those who practice them.	Imagine a group of people that could be scapegoats. List and describe stereotypes of this group and the treatment they received because of them.	Read the article. What could be reasons for the persecution? How can you justify the minds of those responsible?
Photography Photographs tell stories. Write a caption for the photo and explain why you chose it.	**Genetics** Certain characteristics are blamed on genetics. Do genetics impact the characteristics of your group? Explain the reasoning behind your answer. Use your science knowledge.	**Stereotypes** Your groups was persecuted. Identify a groups who has been persecuted in more recent years. Compare the two and give reasons why.

Prejudice	Scapegoating	Articles
Is it possible to grow to adulthood without harboring some prejudice? Why or why not?.	What is scapegoating? Explore the word's etymology and hypothesize about its present day meaning. How was your groups scapegoated?	Read the article. What is genocide? Did the people in your article face genocide? Why?
Photography Look at the clothing, hair, setting, body language, and objects to help determine social, economic, country of origin and so on. Can you see the emotions in the people? How? Do you think they are related?	**Genetics** Do genetics cause brown hair? How? List one way genetics affects your group (in your opinion). If genetics don't affect your group explain why.	**Stereotypes** Identify stereotypes your group faced. Pick a clique in the school and discuss the traits of that group. Are they stereotyped?

Photography	Prejudice
Compare two photographs taken of similar events. What are the similarities and differences? What might be the significance of these similarities and differences	Is it possible to grow to adulthood without harboring some prejudice? Why or why not?.
Genetics Did genetics have an impact on the Aryan race? Why? Does it in the group you are studying? Why?	**Scapegoating** Identify and discuss the scapegoating that took place in your group. Compare the scapegoating of your group to that of a present day group.
Stereotypes Name a group you stereotype and discuss those traits that you stereotype. What were the stereotypes your group had?	**Articles** Read the article. If you were the person behind the persecution and were asked why you did what you did, what would you say?