

KNOWLEDGE – REMEMBER IT!

Remember previously learned information. Define basic terms.

Recall specific facts.

Definition: remembering an idea or fact in a form very close to that in which it was originally encountered. Realizing that *knowing* may involve more complex thought processes such as relating, reorganizing, and using judgment, *knowledge* is basically information that is stored in the brain. The ability to recall or remember that information in its original form is *knowledge*, the lowest level of thinking.

Subcategories at the knowledge level include Knowledge of Specifics; Knowledge of Ways of Dealing with Specifics; and Knowledge of Universals. Examples include: knowledge of terms, specific facts (including dates and events), methods of organizing, common practices, judgment criteria, and rules of social behavior.

Knowledge differs from the other five categories in that **remembering** is the major psychological process. In the other categories remembering is only one small part of a more complex process of thinking.

Highest level: remembering the theory of relativity or evolution

Lowest level: naming the capital that matches a particular state

VERBS to Use at the Knowledge Level

define	label	name	recognize
describe	list	recall	remember

Activities at the knowledge level ask students . . .
to recall information, make lists, label maps, memorize facts,
and answer right/wrong questions.

**Remember: At the knowledge level,
students recall previously learned information.**

20 Questions / Prompts for Your Students

1. What is a kudo? *define*
2. How is Congress organized? *remember*
3. What is the law of gravity? *define*
4. Name the four seasons. *remember*
5. What is photosynthesis? *define*
6. Which state on the map is Indiana? *recognize*
7. How many donuts are in a dozen? *recall*
8. What is the theory of evolution? *define*
9. Which state has the largest area? *recall*
10. Where is the Table of Contents located? *remember*
11. Who was the first president of the United States? *recall*
12. What type of punctuation is needed in this sentence? *remember*
13. Give three definitions for the word *bank*. *define*
14. Underline the word that best fits the picture. *define*
15. What is the correct way to set a table? *recall*
16. When was John F. Kennedy assassinated? *recall*
17. List the primary colors. *remember*
18. What type of clothing was typically worn during the 1700s?
remember
19. List the five major categories of vertebrates. *remember*
20. What information do you need to determine this food's nutritional value? *recall*

**NAME THE
FOUR
SEASONS.**

Sample Products & Activities at the Knowledge Level

fill in the blank worksheet	words/definitions	fact file
premade, labeled map	spelling list	labeled diagram
basic fact worksheet	matching worksheet	observation
true/false quizzes	study cards	discussions
list of story elements	list of writing ideas	
multiple choice worksheets	spelling test question/answer	
"Concentration" games		

COMPREHENSION – EXPLAIN IT!

Understand the literal meaning of the information.
Interpret for later use. Summarize in your own words.

Definition: *to know what is being communicated and to be able to make use of the information.* The communication may be verbal, pictorial, symbolic, or experiential. It is not meant to be synonymous with complete understanding or having a full grasp of the message—just its literal content. *Comprehension* is the lowest level of understanding but is probably the most emphasized in classroom instruction.

There are basically three types of *comprehension*:

- translation: to put in another language, other terms, or another usable form;
- interpretation: to reorder or classify the ideas so that inferences, generalizations, or summaries can be made; and
- extrapolation: to make estimates or predictions based on what is given in the communication.

Comprehension is different from *analysis* because *comprehension* interprets literal meaning only. At the *analysis* level, more inference and recognition of unstated assumptions impacts thinking.

Highest level: predicting continuation of trends based on information read

Lowest level: being able to summarize a story

VERBS to Use at the Comprehension Level

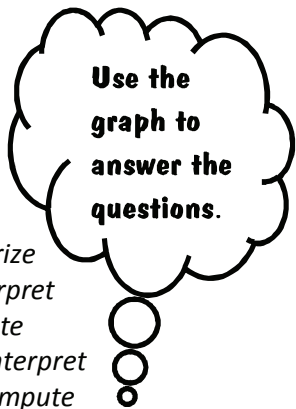
classify	estimate	interpret	summarize
compute	explain	predict	translate
conclude	generalize	reorder	understand

Activities at the comprehension level ask students . . .
to translate and interpret information so that they can use it.

Remember: At the comprehension level, students interpret literal meaning.

20 Questions / Prompts for Your Students

1. What is the main idea of this paragraph? *generalize*
2. Which details support the topic sentence? *explain*
3. What does this cartoon portray? *interpret*
4. Can you use this word in a sentence? *use*
5. Can you retell the story in your own words? *summarize*
6. What was the writer trying to say in this poem? *interpret*
7. What do you think uno, dos, tres . . . means? *translate*
8. What message is this infomercial communicating? *interpret*
9. Use the graph to answer the following questions. *compute*
10. From three examples, choose the best definition for this word. *understand*
11. In your own words, summarize what the mayor said in his speech. *summarize*
12. What symbols might you use to represent landmarks on this map? *translate*
13. Which graph illustrates the information needed to solve this problem? *interpret*
14. Can you summarize the points of view presented in the debate? *summarize*
15. Can you estimate how many copies of this book have been sold? *estimate*
16. Why did the United States become its own country? *generalize*
17. Based on the data in this table, which of the following is true? *interpret*
18. What do you think the author means when he says ___? *interpret*
19. Why do you think these two characters are such good friends? *infer*
20. Do you have enough information to answer the question? *conclude*



Use the graph to answer the questions.

Sample Products & Activities at the Comprehension Level

book report	word problems	blueprint
study sheet	ESL activities	story telling
collage	dramatization	overview speech
music reading	test review	book summary
graph representations	English translation	poetry interpretation
math computation	experiment notes	annotated bibliography
questions from a chart	pattern/instructions	questions from a graph

APPLICATION – USE IT!

Apply previously learned information to new situations. Choose the correct method for problem solving. Experiment to predict outcomes.

Definition: *given a problem new to the student, he will apply what he knows and use it in this situation without being prompted.* The student might use general ideas, procedures, or methods that he has remembered and *applied* to this new situation. This transfer of training happens more readily when the student has learned methods for attacking problems, can state generalizations, and has developed self-confidence and control. Because the student will *apply* and *predict*, teaching objectives at this level sound very much alike.

The difference between *application* and *comprehension* is that at the *comprehension* level, the student understands the literal message or the abstraction well enough to verbalize or demonstrate it when asked to do so. At the *application* level, however, that understanding is actively put to use while **solving a new problem – without being prompted** – and without strategies to choose from.

Highest level: setting up a procedure for solving a problem

Lowest level: supporting a conclusion with evidence

VERBS to Use at the Application Level

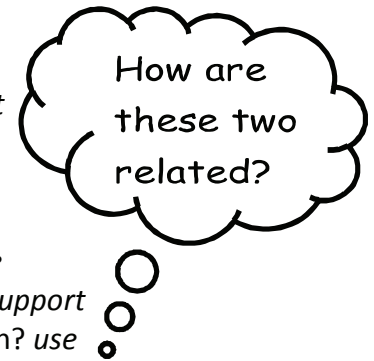
apply	demonstrate	predict	solve	relate
calculate	experiment	discover	choose	use
transfer	support a conclusion			

Activities at the application level ask students . . .
to solve problems by applying what they know to a new situation.

Remember: At the application level, students apply what they already know to new situations.

20 Questions / Prompts for Your Students

1. Why did you choose this answer? *support*
2. Why won't this light come on? *solve*
3. How are these two related? *relate*
4. What do you think will happen? *predict*
5. How is multiplication like addition? *relate*
6. What reasons support your conclusion? *support*
7. How will you make use of this information? *use*
8. What questions will you ask in the interview? *choose*
9. Can you draw a flow chart showing your problem solving steps? *calculate*
10. Why do you think this piece of wood will float? *predict*
11. What materials will you need to prepare for this lab? *solve*
12. How can you figure out the area of this triangle? *choose the correct method*
13. How will you teach this math concept to a friend? *transfer*
14. Can you make a chart to show how many books you have read? *apply*
15. Can you transfer the grammar rules into your story writing? *transfer*
16. How does the Law of Gravity explain the outcome of this experiment? *support*
17. Find the area of the classroom. *use*
18. According to the definition of *extinct*, which animals would fall into this category? *relate*
19. What information is needed before you can answer this story problem? *solve*
20. How would our bodies change if we skipped lunch every day this week? *predict*



Sample Products & Activities at the Application Level

board game	computer	simulation	experiment
map making	chart	diagram	illustration
model	construction	collection	display
interview	peer teaching	problem solving	

ANALYSIS – TAKE IT APART!

Break down information into understandable parts. Recognize organizational structure. Identify relationships and connections.

Definition: *the breakdown of a communication for the purpose of clarification. Analysis occurs when students are able to recognize how the information is organized as well as the technique used to convey the message. The hierarchy and relationships between ideas are made explicit. The ability to recognize unstated assumptions is a major part of *analysis* as well as the ability to distinguish important from less important information.*

Analysis differs from *comprehension* and *application* in the following ways:

- At the *comprehension* level, the emphasis is on understanding the literal meaning;
- At the *application* level, the understanding of a generalization or principle is applied to a new situation; and
- At the *analysis* level, the material is **broken down into parts for the purpose of determining relationships and organizational patterns.**

Highest level: identifying relationships and connections between pieces of information

Lowest level: recognizing the organizational structure of the information

VERBS to Use at the Analysis Level

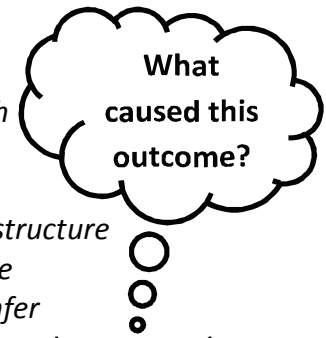
analyze	compare	discriminate	separate
break down	connect	distinguish	relate
classify	contrast	infer	recognize structure

Activities at the analysis level ask students . . .
to find patterns, ask questions, make inferences from observations,
and separate important from unimportant information.

Remember: *At the analysis level, students break down situations or quantities of information into smaller, understandable parts.*

20 Questions / Prompts for Your Students

1. Is this statement a fact or opinion? *distinguish*
2. What do you read between the lines? *infer*
3. Why is this information relevant? *analyze*
4. How is this information arranged? *recognize structure*
5. What caused this outcome? *identify technique*
6. What can you infer from your observation? *infer*
7. What assumptions did you have to make? *recognize assumptions*
8. What is the general structure of this story? *recognize structure*
9. How would you break down this story into chapters? *break down*
10. How will you distinguish fact from hypothesis? *distinguish*
11. What was the author's purpose for writing this chapter? *infer*
12. What do you question about this theory? *detect logical fallacies*
13. How should we organize this information? *classify*
14. What pattern do you see in this group of numbers? *recognize structure*
15. What is the major premise behind your argument? *identify motives*
16. What main question is the author trying to answer in this chapter? *distinguish*
17. What is the relationship between these two ideas? *relate*
18. What technique is being used in this persuasive speech? *identify technique*
19. What information contributed to your being able to solve the mystery? *analyze*
20. Is this a logical explanation? (Does it make sense?) *detect logical fallacies*



Sample Products & Activities at the Analysis Level

analysis of artwork	family tree	display
cause-effect	main idea-detail	survey
sentence diagramming	crossword puzzle	mobile
word sorting	scientific observation	
outlining	dissecting plants/animals	

SYNTHESIS – CREATE IT!

Create something new by making connections with prior knowledge.

Develop a hypothesis or prediction. Plan a procedure or a design.

Definition: *the putting together of elements and parts to form a whole.* This unique arrangement must create a new pattern or structure that was clearly not there before. This level of the taxonomy clearly recognizes creative behavior. However, the creative expression must be within the limits of the problems and/or materials being worked with. *Synthesis* does not imply free creative expression.

The three subcategories of *synthesis* include the production of:

- a unique communication such as a creative essay or an extemporaneous speech;
- a plan that proposes ways of testing a hypothesis, that integrates results to form a new conclusion, or that conveys a unique design; and
- abstract relations such as the formulation of new theories, ideas, or discoveries.

Synthesis is different from *comprehension* in that the ideas that are gathered are new. *Comprehension*, *application*, and *analysis* also connect elements and construct meaning, but the results are less focused on originality and uniqueness. In *synthesis* alone the student must draw upon elements from many sources to **produce a structure or pattern that clearly was not there before.**

Highest level: designing a new chemical process based on what is known about chemistry, unit operations, and technology

Lowest level: create a list of new ways to use this object

VERBS to Use at the Synthesis Level

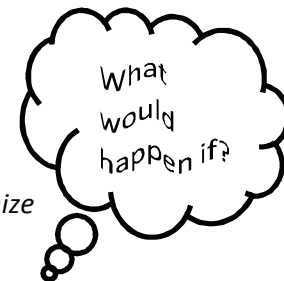
arrange	create	generalize	modify	combine
design	hypothesize	plan	compose	develop
invent	write			

Activities at the synthesis level ask students . . .
to design a plan, write an original communication,
or create something new.

Remember: At the synthesis level, ideas are rearranged to form a new whole, clearly unlike what was there before.

20 Questions / Prompts for Your Students

1. How will you express that idea in writing? *write*
2. How will you test your hypothesis? *hypothesize*
3. How do you propose to organize this project? *organize*
4. Compose a song about this event. *compose*
5. What would happen if. . .? *hypothesize*
6. How would you turn this poem into a song? *modify*
7. Can you design a tool that will make this job easier? *design*
8. How will you combine these elements to make something new? *combine*
9. Using this set of objects, what invention can you create? *invent*
10. What new discoveries can you come up with by using this theory?
discover
11. Will you stand up and make a few brief comments about your idea?
generalize
12. If you take new ideas into consideration, how might your original
thoughts change? *combine*
13. How many new uses can you think of for this object? *develop*
14. How many ways can you think of to solve this problem? *hypothesize*
15. Given these specifications, how would you design a new school cafeteria?
design
16. Propose a plan for lowering taxes in the United States. *propose*
17. How can you rewrite this story to make it more descriptive? *modify*
18. What solution would you suggest? *propose*
19. What kind of puzzle can you create using this week's spelling words?
create
20. Write a mystery combining the characters from these two books.
combine



Sample Products & Activities at the Synthesis Level

advertisement	design for a tool	journal
narrative	art gallery	poetry writing
comic strip	design of a process	musical review
creative writing	group mural	extemporaneous speech
illustrated original story		

EVALUATION – JUDGE IT!

Assess for accuracy. Evaluate based on a specific set of criteria.
Compare with the highest known standards.

Definition: *judging the value of ideas, works, solutions, methods, or materials for a purpose.* A set of specific criteria as well as standards are used in the appraisal. While *evaluation* is the “last stage” of the taxonomy, it is not necessarily the last step in thinking or problem solving. It is placed at level six because the process of *evaluation* involves all the other behaviors: *knowledge, comprehension, application, analysis, and synthesis.*

Evaluation is divided into two types of judgments:

- Internal: locating errors within the work being evaluated; and
- External: evaluating the work based on a specific means-ends relationship. Given the end product, how appropriate and correct was the means?

Evaluation is different from *analysis* in that a **final judgment is made** after *knowledge* has been *applied* and *analysis* has been completed.

Highest level: determining which essay best conveys the spirit of freedom and independence

Lowest level: locating errors in content or logical thinking

VERBS to Use at the Evaluation Level

appraise	conclude	evaluate	justify
critique errors	compare	defend	judge
assess	recommend	locate	give an opinion

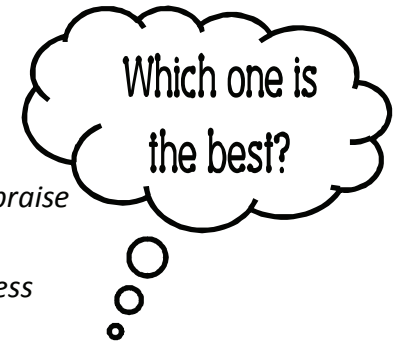
Activities at the Evaluation Level ask students . . .

to make recommendations, assess value, critique ideas, make choices, and support opinions.

Remember: *At the evaluation level, students are asked to judge something based on a distinct set of criteria.*

20 Questions / Prompts for Your Students

1. Which one is the best? *compare*
2. What is the most important? *value*
3. What do you think about this issue? *appraise*
4. Is this story well written? *judge*
5. How would you assess this project? *assess*
6. Why is this your favorite? *critique*
7. Are these sentences written correctly? *locate errors*
8. Why is this problem so difficult? *criticize*
9. Can you find errors in logic for this hypothesis? *locate errors*
10. What set of criteria would best judge these science fair projects? *appraise*
11. Does the method used in solving this problem deserve full credit? *value*
12. Write down your thoughts and opinions about this topic. *critique*
13. What criteria would you use to assess this product? *assess*
14. Arrange this list of people in the order of their importance. *value*
15. Evaluate the difficulty level of this problem. *evaluate*
16. Give your opinion of the speech based on the rubric criterion. *judge*
17. Why is this painting more valuable than others? *value*
18. Why doesn't this answer make sense? *locate errors*
19. If your house was on fire, what objects would you save? *value*
20. Do the arguments presented in this speech relate to the conclusion? *compare*



Sample Products & Activities at the Evaluation Level

letter to the editor	editorial	panel discussion
mock trial	self-evaluations	revision
peer feedback	proofreading	product judging
poetry evaluation	grading papers	music critiquing
art critiquing	item appraisal	criteria design

Knowledge Content Questions

☆ Language Arts

- Name the character who solved the mystery.
- Can you list the nouns in this sentence?
- Describe the setting of the story.
- Where was the main character born?
- Can you spell this word correctly?

☆ Math

- What is (identify) this number?
- Who (name the person) invented the calendar?
- How many days are in October?
- How many digits are needed to make this number?
- How many objects are in this set?

☆ Social Studies

- Recite the Pledge of Allegiance.
- Who was the first person to walk on the moon?
- Locate the Rocky Mountains on this map.
- Can you name the oceans?
- What percent of the earth is water?

☆ Science

- Name animals with fur.
- What is the definition of matter?
- Can you match the picture of the flower with its name?
- What is the name of the largest mammal?
- Who invented the telephone?

Comprehension Content Questions

☆ Language Arts

- Summarize the events in this story.
- Can you explain the problem in this chapter?
- How would you describe your feelings after reading this article?
- Can you put the events of the story in order?
- How would you paraphrase that sentence?

☆ Math

- Can you convert this digital time to analog?
- What is being asked in this problem?
- Can you explain the process of making change?
- Would you explain how you got this answer?
- Can you convert this decimal to a percent?
- What time is it in Japan?

☆ Social Studies

- How would you summarize the events in the Civil War?
- Will you tell in your own words how the 13 colonies became the United States?
- Can you explain the significance of the Emancipation Proclamation?
- Can you describe the events that led to the first Thanksgiving?
- Was the Underground Railroad really underneath the ground?

☆ Science

- Can you explain the steps of your experiment?
- Can you describe the soil in detail?
- What is a physical change?
- How do plants make food?
- Can you convert this Fahrenheit temperature to Celsius?
- How was the microwave discovered?

Application

Content Questions

☆ Language Arts

- Can you show me which paragraph led to your answer?
- How were you able to solve the mystery without reading the last chapter?
- Can you use that verb in a new sentence?
- Will you divide that sentence between subject and predicate?
- How can you find out what this word means?

☆ Math

- Will you use addition to solve this word problem?
- Can you show me how you got this answer?
- How do you solve for this variable?
- What time will it be ten minutes from now?
- How many nickels does it take to make a dollar?

☆ Social Studies

- Would you draw the route that the *Titanic* was on before it sank?
- What happens if you don't wear your seatbelt?
- Can you demonstrate how this game was played in the 1800s?
- How does "Honest Abe" apply to schoolwork?
- If populations in southern states change each year, what can you predict will happen in the next census?

☆ Science

- Can you apply what you know about an inclined plane to this situation?
- How could we demonstrate this object's buoyancy?
- Can you construct a model of the Empire State Building?
- How would you figure out the average resting heart rate of three friends?
- Which object falls faster – a golf ball or a baseball?
- What is the mass of this object?
- Which battery contains the most energy?

Analysis

Content Questions

☆ Language Arts

- What factors distinguish a main character from a supporting character?
- Which of the following pictures represents the setting?
- Which paragraph in the text supports your idea?
- Why is this story considered a fable?
- What is the author really trying to say here?
- Which clues helped you to solve the mystery?

☆ Math

- Which of the sets represents an odd number?
- What steps are needed to solve this division problem?
- How does addition relate to multiplication?
- Can you determine the greatest common factor of these two numbers?
- How would you simplify this fraction?

☆ Social Studies

- What were the events that led to the Revolutionary War?
- Which facts support your view of this law?
- What is the major difference between the Democrats and the Republicans?
- Why is JFK considered one of the most famous presidents?
- What main points did Martin Luther King make in his "I Have a Dream" speech?
- What data supports a tax increase in gasoline?

☆ Science

- How does your data support your theory?
- What is the difference between a spider and an insect?
- What physical characteristics distinguish a reptile from an amphibian?
- Can you create a diagram that shows the growth of mold?
- How does a scientist distinguish between algae and bacteria?

Synthesis

Content Questions

☆ Language Arts

- Can you predict what will happen next in the story?
- How will you write a description that makes the reader visualize your thoughts?
- Create a character like Paul Bunyan or Robin Hood.
- How would you write a sentence that shows possession?
- Write a humorous story about your idea.
- How can this word be used to show its multiple meanings?
- Create a new ending for this story.

☆ Math

- What new numbers can you make by rearranging the digits?
- What is another way you might solve this problem?
- How many ways can you show 85 cents?
- How many triangles are in this diagram?
- Which is more – a pound of feathers or a pound of lead?

☆ Social Studies

- What ideas can you add to the Bill of Rights?
- What is another way to elect a president?
- What do you think it was like on the *Mayflower* voyage?
- Create a plan for a new super structure.
- If you were to write a letter to George Washington, what would you say?
- Can you create a campaign slogan for a presidential election?
- What do you think it would be like to live near the equator?
- What if Canada, the United States, and Mexico were all one country?

☆ Science

- How are the results of both experiments related?
- How did you develop your hypothesis?
- What is another way that this energy might be produced?
- Is there life on Mars?
- What do you predict will happen in this experiment?

Evaluation

Content Questions

☆ Language Arts

- Why do you recommend this book?
- Why is this the best movie you've seen this year?
- Why do you prefer this poem to the other one?
- Why is this passage considered to be descriptive language?
- What makes this author your favorite?
- What criteria make this writing outstanding?

☆ Math

- Why is this problem so difficult to solve?
- Would you rather have \$1000 now or a penny a week that doubles each time you are paid?
- Which problem is the easiest to solve?
- Should a student be given credit for solving a problem if the final answer is wrong? Defend your answer.

☆ Social Studies

- Using the following rubric, what grade would you give this project?
- Debate whether capitalist or socialist countries have a higher standard of living.
- Which president contributed most to this country's growth?
- Is war the best way to fight terrorism?
- Justify why a woman should be president.
- Which patriotic song is the most emotional?
- Why is America considered "the land of the free and the home of the brave"?

☆ Science

- Why has this scientific invention affected your life the most?
- How would you assess the progress being made to fight cancer?
- Debate which human disease is the worst.
- Which species' extinction will affect the world the most?
- Why should we pay attention to recycling?
- Rank the 5 chemical elements that are the most valuable to society.