
Study Guide Zone



OAT Test Study Guide

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OAT Test Resources

Free OAT Practice Tests

http://www.testprepreview.com/oat_practice.htm

Financial Aid Facts

<http://www.finaidfacts.org>

Scholarship Help

<http://www.scholarshiphelp.org>

Study Tips and Information

http://www.studyguidezone.com/resource_tips.htm

OAT Overview

The OAT is indeed a difficult examination, and as such, it was required that media be chosen by which intellectual ability could be measured. In the case of the OAT, math, reading, natural sciences and physics were the selected media. While there is an ongoing, low-profile controversy about whether or not this test truly measure's your abilities with regards to what you'll need for optometry school, that is not the purpose of this book. The purpose is, however, to make sure that you're able to achieve the best possible state of preparation, allowing you to maximize your score potential - no matter if your actual aptitude has been measured.

As no test can measure all aspects of a person's intelligence, the OAT measures those skills deemed most critical to a new optometry student. Then again, if any admission test, no matter how cleverly assembled, is inherently inadequate, why perform this type of testing at all? This is a question posed by every student who sees the OAT looming ahead of him/her. Nevertheless, the answer to this question is quite simple, and quite reasonable; to make optometry school acceptance a more fair experience, by expanding the basis approval beyond your grades.

Your OAT score is one of the most critical elements to your qualification for optometry school, so it is naturally much too important for you to take this test unprepared. The higher your OAT score, the better your chances of admission will be for a respected, competitive optometry program.

While different optometry programs assign a different weight or importance to your OAT scores, it is safe to assume that your OAT will be a major determining factor when it comes to the final admission decision made by each optometry school to which you've applied.

Careful preparation, as described in this expert guide, along with hard work, will dramatically enhance your probability of success. In fact, it is wise to apply this philosophy not only to your optometry school applications, but to other elements of your life as well, to raise you above the competition. Your OAT score is one of the areas in the optometry admission process over which you have a substantial amount of control; this opportunity should not be taken lightly. Hence, a rational, prepared approach to your OAT test as well as the rest of the admission process will contribute considerably to the likelihood of acceptance.

Keep in mind, that although it is possible to take a OAT test more than once, you should never take the test as an "experiment" just to see how well you do. It is of extreme importance that you always be prepared to do your best when taking the OAT.

Testing and Analysis

It won't take you long to discover that the OAT is unlike any test you've taken before, and it is probably unlike any test you will ever take again in your academic career. The typical high school or college test is a knowledge-based test. The OAT, however, is skills-based.

What does this mean to you? It means that you'll have to prepare yourself in a completely different way! You won't simply be reciting memorized facts as they were phrased in some textbook.

The OAT requires you to think in a thorough, quick and strategic manner...and still be accurate, logical and wise.

This test is designed to judge your writing, verbal and mathematical ability in the ways that optometry schools feel is vital to the success of first year optometry students.

To some extent, you have already gradually obtained these abilities over the length of your academic career. However, what you probably have not yet become familiar with is the capability to use these abilities for the purpose of maximizing performance within the complex and profound environment of a standardized, skills-based examination.

There are different strategies, mindsets and perspectives that you will be required to apply throughout the OAT. You'll need to be prepared to use your whole brain as far as thinking and assessment is concerned, and you'll need to do this in a timely manner. This is not

something you can learn from taking a course or reading a book, but it is something you can develop through practice and concentration.

This guide provides you with the professional instruction you require for understanding the traditional OAT test. Covered are all aspects of the test and preparation procedures that you will require throughout the process. Upon completion of this guide, you'll have the confidence and knowledge you need for maximizing your performance on your OAT.

Introduction to the OAT

The purpose of the OAT is to establish a standard method of measurement for the skills that have been acquired by optometry school applicants. These skills are considered critical to optometry schools for a first-year student to be able to succeed. The principle behind the OAT is similar to the SAT's that are required for application to American colleges. Although these tests are similar experiences, the OAT is much more challenging and complex.

Fortunately, the OAT does not change very dramatically from year to year. What this means to you, is that it has become possible for quality practice tests to be produced, and if you should take enough of these tests, in addition to learning the correct strategies, you will be able to prepare for the test in an effective manner.

The OAT Scoring Scale

OAT scoring is not hard to comprehend when it is properly explained.

There is no “passing” score to the OAT, but you will need to know what the cut off average score is for the optometry schools to which you’re looking to apply. For this information, check their website, or call, and they’ll tell you the average score of students who are accepted.

Each optometry school has a different policy for weighing OAT scores with your GPA. The majority of optometry schools will weigh your OAT score more heavily than your GPA. In fact, some schools will weigh your OAT at 70% and your GPA at 30%, which means that this one examination is worth more than your 4 years of undergraduate work.

It’s up to you to look into the optometry schools to which you’ll be applying, so that you’ll have this information, and know the exact value of your OAT. Many schools will make their calculation structure for the combination of OAT and GPA available to the public.

Knowing this information before you enter the OAT examination means that you know exactly what you’re facing that day. You will have a realistic perception of the worth of the test, and you will have the proper motivation to fully apply yourself to reach your maximum potential.

You’ll also be able to realistically judge the type of school to which you should be applying, and you can better set out your future plans in your mind.

Quantitative Test

The Quantitative Test will require you to:

- understand basic concepts of arithmetic, algebra, geometry, and data analysis
- reason quantitatively
- solve problems in a quantitative setting

To identify the skills that need extra work, complete a practice test that gives additional information, or, complete a practice test and look for yourself at the areas where you excelled, and the areas where struggle was apparent.

Your “critical” math skills will be in the areas where you have made the most wrong answers on your practice test. Those will be the math skills that will best help your score in the shortest period of time, if you manage to practice and better these skills. This is the area in which you can maximize your score increase potential.

To master your critical math skills, there are certain steps you may take:

- Read over the skill lesson in this book, very carefully
- Find some practice tests and work specifically on the questions that test your critical math skills, practicing the new skills that you have learned in through your review.
- Use textbooks for increased detail, assistance, and question examples for the areas in which you are struggling the most.

- Practice, practice, practice!

The best way to get to learn your math skills is to rehearse them with as many new sample questions as you can get your hands on. The questions you do, the more you will become familiar and comfortable with that type of question, so that you can move on and concentrate on other areas for perfection.

Question Types

The test is very consistent with the type of mathematics questions that it uses, year after year. The following are the types of mathematical questions that you are likely to encounter:

- Arithmetic
- Divisibility
- Multiplication
- Addition
- Subtraction
- Evens and Odds
- Prime Numbers
- Percents
- Square of a Number
- Exponents
- Roots
- Averages

Arithmetic

Arithmetic skills refer to the questions that can be solved by using addition, subtraction, multiplication and/or division.

Since calculators are permitted in the test, the questions will obviously not be purely arithmetic - they're not out to measure your ability with a calculator. So in this style of question, you'll need to recall your *order of operations*. A good trick to recall your order of operations is "Please Excuse My Dear Aunt Sally"...before you say "huh?" recognize the first letters in this phrase:

- Work within **P**arenthesis
- Simplify **E**xponents
- **M**ultiplication and **D**ivision
- **A**ddition and **S**ubtraction

The majority of arithmetic questions will require you to take multiple steps, and will likely test other skills as well, instead of being purely arithmetic. Often, the questions will be presented in the form of word problems, where you will need to decide when to add, subtract, multiply and divide.

For example:

How many egg cartons are needed to hold 300 eggs, if each carton can hold one dozen (1 dozen = 12)

- A. 15
- B. 18
- C. 22

- D. 25
- E. 28

Note: the answer is 25

Divisibility

The factors of integer X are the integers by which X can be divided without leaving a remainder. Thus, X is divisible by its factors.

For example:

The number 10 is divisible by both 5 and 2. 10 can be divided by both of these integers without leaving a remainder.

To review the rules of divisibility, have a look at the following:

1. Numbers divisible by 2 end in even numbers.
2. Numbers divisible by 3 can be determined by adding the sum of their digits and checking if that number is divisible by 3 (for example the number 123: $1+2+3=6$, 6 is divisible by 3 with no remainder).
3. Numbers divisible by 4 can be identified if their last two digits will divide by 4 without a remainder (for example, the number 624: the last two digits are 24, which are divisible by 4 with no remainder).
4. Numbers divisible by 5 end only in 5 or 0.

5. Numbers divisible by 9 occur when the sum of its their digits are divisible by 9 (for example, the number 639: $6+3+9 = 18$, which is divisible by 9).

6. A number is only divisible by 10 if it ends in 0

The following is an example of a divisibility question:

Which of the following integers divides into both 200 and 150?

- A. 3
- B. 7
- C. 30
- D. 50
- E. 300

Note: The correct answer is (D)

Multiplication

The following are a few simple rules to keep your multiplications on track:

Positive x Positive = Positive

Negative x Negative = Positive

Negative x Positive = Negative

Addition

Here are some rules to be certain that there are no slips while doing addition:

Positive + Positive = Positive

Negative + Negative = Negative

Negative + Positive = either positive or negative (you must use the absolute value of both: subtract the smaller from the larger and keep the sign of whichever absolute value was larger)

Subtraction

The definition of subtraction is: $A - B = A + (-B)$

A minus B is the same as A plus (the opposite of B)

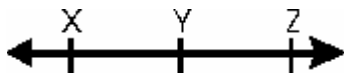
$X > 0$, means that X is a positive number

$X < 0$, means that X is a negative number

$$-(A - B) = -A + B = B - A$$

$$(-X)^2 = X^2$$

If $X \neq 0$, $X^2 > 0$



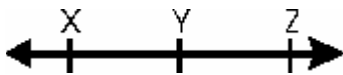
If, on the number line, one number occurs to the left of another number, the number on the left is the smallest number.

Therefore, when studying the line above, you will know that $X < Y$ and $Y < Z$.

For example:

Use the number line to make conclusions with regards to whether each number is positive or negative.

In this situation, you will have an easier time if you implement specific numbers to fit the problem. For example, let $X = -7$, $Y = -2$, and $Z = 3$. Be certain to utilize some negative numbers while substituting.

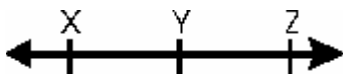


The following is an example of a subtraction question:

$$Y - X$$

Solution: Positive Y is greater than X.

$$-2 - (-7) = -2 + 7 = 5$$



Evans and Odds

An even number is any word that is divisible by 2: numbers that are within the set $\{\dots-6, -4, -2, 0, 2, 4, 6,\dots\}$. Remember, though, that an

even number is divisible by 2 and not have any remainder. Keep in mind also that 0 is an even number. Consecutive even numbers are all located 2 units apart. For example, if x is an even number, then the next consecutive even number would be represented as $X + 2$.

Odd numbers, on the other hand, are numbers within the set $\{\dots-5, -3, -1, 1, 3, 5, \dots\}$.

The following charts demonstrate the properties of odd and even numbers. To check the property of a number, you can simply substitute the appropriate numbers.

Properties of odd and even numbers with Addition

| Property | Example |
|--------------------|----------------|
| Even + Even = Even | $2 + 8 = 10$ |
| Odd + Odd = Even | $3 + 9 = 12$ |
| Odd + Even = Odd | $3 + 8 = 11$ |

Properties of odd and even numbers with Addition

| Property | Example |
|--------------------|-------------------|
| Even x Even = Even | $4 \times 6 = 24$ |
| Even x Odd = Even | $4 \times 5 = 20$ |
| Odd x Odd = Odd | $3 \times 9 = 27$ |

Consider the following example:

If R is an odd integer, what are the next two consecutive odd integers?

- A) T and V
- B) R and R+1
- C) R+1 and R+2
- D) R+2 and R+4
- E) R+1 and R+3

Note: the correct answer is (D)

Here's another example:

If x is an odd integer and y is an even integer, tell whether each expression is odd or even.

- A. x^2
- B. xy
- C. y^2
- D. $x + y$
- E. $2x + y$

Note (A) is odd. (B) is even. (C) is even. (D) is odd, and (E) is even.

Prime Numbers

A prime number is defined as an integer that is greater than 1, and has only two positive factors, 1 and itself.

For example, 7 is a prime number, as its only factors are 1 and 7. However, 6 is not a prime number, because its factors are 1, 2, 3, 6

The first ten prime numbers are: 2, 3, 5, 7, 11, 13, 17, 19, 23, 29

Note, though that 1 is not a prime number, and both the smallest and the only even prime number is 2.

Prime factorization is the process by which you express a number as a result of only prime numbers.

For example:

To create the prime factorization of 24, you'd represent it as:

$$2 \times 2 \times 2 \times 3 \text{ or } 2^3 \times 3$$

To create the prime factorization of 15, you'd represent it as:

$$5 \times 3$$

An example of a factor question is:

If $xy = 13$ and both x and y are positive integers, then what is the sum of $x + y$?

- A. 13
- B. 14
- C. 16
- D. 20
- E. 26

Note: the answer is B

Here is another example:

What is the sum of the first 5 prime numbers?

- A. 18
- B. 28
- C. 30
- D. 34
- E. 38

Note: The first five prime numbers are 2, 3, 5, 7, 11 and their sum is 28. The answer is B.

Percents

The word percent means “hundredths” or a number which is divided by 100. Converting a number into a percentage involves multiplying the number by 100.

A percent can be determined by performing the division of the part by the total and multiplying it by 100:

$$\text{Percent} = \frac{\text{Part}}{\text{Total}} \times 100$$

For example, if Wendy missed 12 out of 80 examination questions, what is the percent of questions she missed?

Percent = $\frac{\text{missed questions}}{\text{Total}} \times 100 = \frac{12}{80} \times 100 = 0.15 \times 100 = 15\%$

Total

The phrase "X is N percent of Y" can also be written mathematically as

$$X = \frac{N}{100} \times Y$$

The word "is" means equal (=), while the word "of" means "multiply". However, before multiplying, you must change a percent into a decimal or fractional format.

For example:

5 is 20% of 25, means $5 = 0.20 \times 25$

To change the fraction into the percent, you must first change the fraction into a decimal, and then multiply by 100 (or move the decimal point by 2 places to the right)

For example:

Change the fraction $1/5$ into a percent.

First, change the fraction $1/5$ into the decimal 0.2, and multiply by 100 (move the decimal 2 places to the right). Therefore:

$$\frac{1}{5} \times 100 = 20\%$$

The following table provides the common percentages that you will use on a regular basis, and may wish to memorize.

| Fraction | Decimal | Percent |
|-----------------|------------|----------------|
| $\frac{1}{100}$ | 0.01 | 1% |
| $\frac{1}{10}$ | 0.1 | 10% |
| $\frac{1}{7}$ | 0.1428571 | 14.3% |
| $\frac{1}{6}$ | 0.16666... | 16.6% or 16.7% |
| $\frac{1}{5}$ | 0.2 | 20% |
| $\frac{1}{4}$ | 0.25 | 25% |
| $\frac{1}{3}$ | 0.33 | 33.3% |
| $\frac{1}{2}$ | 0.5 | 50% |
| $\frac{3}{5}$ | 0.6 | 60% |
| 1 | 1.0 | 100% |
| $\frac{3}{2}$ | 1.5 | 150% |

Please note that numbers over 1 achieve percentages that are greater than 100%

Consider the following example:

What is 20% of 50?

A. 5

- B. 8
- C. 10
- D. 12
- E. 15

Note: the answer is C

To solve this question, you must rewrite it as an algebraic question. Therefore, let x represent the unknown number.

$$X = 0.20 \times 50$$

Keep in mind that to change the percent to a decimal, and that the word "of" means that you should multiply.

$$X = 10$$

Here is another example:

5 is what percent of 2?

- A. 2.5%
- B. 25%
- C. 100%
- D. 250%
- E. 500%

Rewrite this as an algebraic equation. $5 = n \times 2$

Solve for n and remember to change the answer to a percent.

$$n = 5/2 = 2.5 = 250\%$$

Therefore, the answer is (D)

Square of a Number

Squaring a number means to multiply that number by itself.

The notation for squaring a number (x) is as follows: x^2

When squaring an integer, the result obtained is called a perfect square.

When preparing for the test, make sure that you are fully capable of understanding and reproducing the following table, as well as recognizing the numbers that are perfect squares and perfect cubes.

| n | n^2 | $n^3(n > 0)$ | $n^3(n < 0)$ |
|----------|-------------------------|--|--|
| 1 | 1 | 1 | -1 |
| 2 | 4 | 8 | -8 |
| 3 | 9 | 27 | -27 |
| 4 | 16 | 64 | -64 |
| 5 | 25 | 125 | -125 |
| 6 | 36 | 216 | -216 |
| 7 | 49 | You will not need to know any higher | You will not need to know any higher |
| 8 | 64 | | |

| | | | |
|----|-----|--|--|
| 9 | 81 | | |
| 10 | 100 | | |
| 11 | 121 | | |
| 12 | 144 | | |

Squared numbers and special properties

- $x^2 > 0$ always, except for $x = 0$
- $x^2 > x$ for $x > 1$
- $x^2 < x$ for $0 < x < 1$
- *important
- $x^2 = x$ for $x = 1$ or 0
- The square root of x^2 equals the absolute value of x .

$$\sqrt{x^2} = |x|$$

- If $x^2 = y^2$, then either $x = y$, or $y = -x$, or $x = -y$.

The following is an example:

Of the following numbers, which is both a perfect square and a perfect cube?

- A. 4
- B. 8
- C. 9
- D. 16
- E. 64

Note: the answer is (E)

Exponents

The mathematical notations for numbers which are the result of a number that is multiplied by itself a number of times is called exponents.

Examples:

$$x^3 = x \times x \times x$$

$$x^5 = x \times x \times x \times x \times x$$

The expression of x^n is also called the n^{th} power of x . The x is the base, while the n is the exponent. Math questions will usually only utilize integral exponents. x^2 is read as x-squared, and x^3 is read as x-cubed. All others are read as a power of x . x^4 is read as the 4th power of x .

When it comes to the power of 10, there is a simple, quick rule that simplifies the powers of 10, by writing it as 1, followed by the number of zeros as specified by the power.

Examples: $10^5 = 1$ followed by 5 zeros. $100000 = 100,000$.

An example you may find is:

Represent 32,456 to the power of 10.

The solution would be as follows:

$$32,456 = 3 \times 10^4 + 2 \times 10^3 + 4 \times 10^2 + 5 \times 10^1 + 6 \times 10^0$$

Consider the following example:

$$\text{Solve for } x: (x - 3)^2 = 49.$$

You could use algebra and take the square root of both sides or since 49 is a perfect square you could guess integers for x . Just remember $x - 3$ must be positive or negative.

If you try guessing, the integers 10 and -4 work. To get an algebra solution, do the following:

$$(x - 3)^2 = 49$$

$$x - 3 = 7 \text{ or } x - 3 = -7$$

$$x = 10 \text{ or } x = -4$$

It is your goal to get problems correct quickly. Sometimes guessing (Guessing in this case means substituting in numbers to see which satisfy the equation.) is faster than solving an equation, if you train yourself to use the technique. Of course, if you cannot "see" the answers fast enough, use other approaches to answer the problem.

Roots

The test will require you to manipulate both square roots and cube roots. Some of the questions will measure whether or not you understand these expressions.

You should remember that none of the following should ever occur:

1. No perfect square can be left underneath a radical (square root) sign.
2. No radical can be within the denominator.
3. No fractions may occur within the radical sign.

Averages

There are three basic components that comprise an average problem:

1. Total
2. Average (also known as a mean)
3. # of numbers

The average is the total of elements that are within the set.

To discover the average, simply divide the total by the # of numbers.

For example:

Jenna's last four test scores were 35, 56, 75, and 28. What is the average of Jenna's test scores?

A. 43

- B. 48.5
- C. 52.5
- D. 54
- E. 47

Note: the answer is (B).

$$35 + 56 + 75 + 28 = 194$$

$$194 / 4 = 48.5$$

Five things to remember when solving averages:

1. If a number that is the same as the average is added, the new average will not change.
2. If a number is added and it is less than the average, the average will decrease.
3. If a number is added and it is greater than the average, the average will increase.
4. If a pair of numbers are added, and they are "balanced" on both sides of the average, the arithmetic mean is the middle value.
5. To discover the average between two evenly spaced numbers, add the first and the last terms and divide them by 2.

Reading Comprehension Test

Flying Over the Passage

A topic that is hotly debated among test taking circles is whether or not you should read the reading passages before you read the question. One theory is that you can save time if you read the questions first and then go back and read over the passage. Another theory is that you should read the passage first and then go into the questions. Both theories have their own individual merit and due to the differences in ability and preferences among test takers, one method may work better than another for you.

Our recommended theory is the flyover. You want to spend some time on the passage, at a bare minimum so that you have a general idea about what the questions are going to ask and get your mind into the proper mindset for the series of questions. However, you don't want to waste too much time on reading the passage, because much of the detail will be forgotten by the time you get to the questions anyway. Therefore, you should fly over the passage. You should read it very quickly for a high-level overview (hence the flyover) understanding of what is contained in the passage.

In part, this is a compromise between the theories that gains most of the benefits of each. You won't waste time on the details and yet will have a general idea of what the passage is about and what to expect.

Creating a Tentative Summary

After you've finished your flyover of the passage, take a few seconds and compose a tentative mental summary of what you've just read. Try to sort out the details you picked up on and arrange them into a loose organizational pattern that describes the passage. Remember that your goal in the flyover is not to check it off of a test-taking list of things to do. You want there to be some purpose behind the flyover and having the definite goal of being able to put together a brief mental summary will allow you to maintain some focus and gain benefit from the flyover – as opposed to just skimming it for the sake of skimming it without actually picking up on anything.

As you begin going through the questions and answer choices, if you get good enough at putting together your mental summaries from practice, you should be able to eliminate a number of answer choices that are immediately contrary to your summary. Note, however that if you find yourself without any good answer choices remaining (because you've eliminated them all) you obviously had to have eliminated the right answer choice. Don't hesitate to reopen an answer choice that you've already "eliminated" from consideration and reconsider it as a possibility. If you think an answer choice contradicts your initial summary, you're probably right, but are not infallible.

Openings and Endings

A main focus of this flyover will be the opening and ending sentences in each paragraph. These are likely to contain the main ideas of the paragraphs and should be mentally tagged for future reference. Try to remember a vague idea of what the different paragraphs are about, because this will save you time when answering questions later.

For the most part, make sure you never try to just answer the questions from this first flyover. Always try to go back and confirm the answer, as your memory will play tricks on you and the writers of the test questions may deliberately have planted a trap for you – remember that they don't exactly have your best interests at heart.

Extraneous Information

Some answer choices will seem to fit in and answer the question being asked. They might even be factually correct. Everything seems to check out, so what could possibly be wrong?

Does the answer choice actually match the passage, or is it based on extraneous information not even contained in the passage. Just because an answer choice seems right, don't assume that you overlooked information while reading the passage. Always try to go back and find the support for the answer choice in the passage. Your mind can easily play tricks on you and make you think that you read something or that you overlooked a phrase.

Unless you are behind on time, always go back to the passage and make sure that the answer choice "checks out."

Using Kitchen Logic

When a question asks the test taker to identify a main idea, you should first focus on the opening and ending sentences of the passage

and each individual paragraph. If you can't find the main idea from these key sentences, then ask yourself how you would describe the passage to someone who had never read it. Which words and phrases would you use to explain the principle ideas of the passage?

This is called "Kitchen Logic" - when you explain something the way you would if you were talking to your friends and family, while sitting at your kitchen table. So, when faced with identifying the main idea of a difficult passage, make it easier on yourself by backing away from the passage and thinking about it in terms of using easy "kitchen logic".

Getting into the Author's Mind

A number of questions become much easier when you place yourself into the mind of the author of the passage. Ask yourself a few different questions:

"Why did the author write this passage?"

"What was the author trying to say?"

What angle is the author taking?"

"What is the single most important point the author is trying to make?"

Put yourself in the shoes of the author and imagine that you wrote the passage and try to identify what you were trying to describe and how you were trying to describe it. If you take on the opinions and ideas expressed by the author as your own, then it becomes easier to answer questions that would be easy for the author to answer.

Emotional Words

Each question will be about a different angle of the passage. For questions asking about the author's emotions, find words in the passage that are adjectives describing emotions.

So, if a question asks what sort of attitude an author had towards the passage or subject, then look throughout the passage for attitude words that might convey a positive or negative attitude. Are words such as brilliant, excited, delightful used, or are words such as depressive, gloomy, disappointing used?

A lot of questions could be answered correctly simply by going through and circling all the adjectives in a passage. Without looking at anything else except for the adjectives in a passage, most questions about attitude or emotion could be answered correctly.

Another way of handling these situations is to arrange all of the answer choices in a list going from most negative to most positive.

Example:

Question: The author's attitude on this topic is best described as:

- A. indignation
- B. eagerness
- C. fear
- D. consent

Now arrange these in order from negative to positive:

(-) indignation, fear, consent, eagerness (+)

This will help sort out the different choices and keep you from overlooking an answer choice and making an easy mistake.

Finding the Key Words

The strategy of finding certain “give-away” words does not only apply to adjectives in questions about emotions or attitude. Many questions about specific details will have key words that hold the “key” to finding the right part of the passage to look in for the answer.

Rather than answering based on your memory of the passage, you always want to have support for your answer choice rooted in a specific part of the passage. To gain that support, it follows that you have to identify which part of the passage to look in. While reading back over the entire passage may be the most foolproof method of finding that important part of the passage, it definitely is not the most time economical method of finding that part of the passage.

A better route is to find key words in the question or answer choices that are likely to stand out in the passage and will enable you to quickly narrow your search down. These key words will be nouns or verbs in the question or answer choices. Once you’ve identified possible key words, then you should scan through the passage quickly looking for either those key words to be repeated in the passage, or their synonyms to appear in the passage. Once you find a particular part of the passage that either has the exact key word repeated or a synonym of the key word, you have probably identified the particular

part of the passage that will contain the support or justification that you need to correctly answer the question and will allow you to be confident in your answer choice selection.

One warning that should be made here is that often question writers may use the exact same word or wording in their answer choices that are used in the passage, but have done so in such a way as to mislead you. So, simply because a particular word or phrase appears in an answer choice and also appears exactly the same in a passage does not make that answer choice correct. Be sure that you reread the answer choice and consider the context that it is in, to ensure that you are not misled by a cheap trick.

In conclusion, always try to connect the question to the right words in the passage that will allow you to save time in finding the right part of the passage to look in for the answer and will give you the key to the correct answer choice.

Making Proper Inferences

Questions that ask you to make an inference from the passage will require you to use your own personal judgment. Anything directly stated by the author is not an inference. You will need to understand the main idea of the passage in order to make a proper inference about the author's intent and mindset.

The obvious will not be enough to answer an inference question. You must logically deduce what follows from what the author has stated in

the passage. You are looking for what can be inferred by the passage, not what is directly stated in the passage.

Applying Ideas for Generalizations

Generalization questions are similar to inference questions in that you have to go beyond what is directly stated in the passage by the author. It helps to put yourself again in the author's shoes. If you were the author and believed in what you had just written, how would you feel about another similar situation? What would either strengthen or weaken your argument. How would you apply the information you have just expressed to a completely different situation?

Using Context Clues

Context clues are a valuable aide in helping you understand difficult phrases or words in the passage. A number of questions will ask you about the meaning of words as they are used in a given passage.

If you already know the definition of the word, or have some familiarity with it, a common mistake is to go with your first impulse and choose the answer that you immediately recognize. However, the reason the test writers may have chosen that particular vocabulary word is because it is used in an unusual context. Therefore, return to the passage and find where the word is used and make sure that you understand how it is being used in the passage.

Once you've made your choice of a good definition go back again to the passage and reread that particular section, but mentally replace the answer choice you've chosen for the word being asked about.

Example:

A passage states: "He was notorious for making decisions on the spur of the moment..."

Question: Which of the following words, if substituted for the word "notorious" would introduce the LEAST change in the meaning of the sentence?

- A. evil
- B. disturbed
- C. famous
- D. despised

If you knew that the most common definition for "notorious" meant being known in an unfavorable sense, then you might be tempted to choose choice A, "evil."

But once you review back over the passage, choice C, "famous" fits in better into the context of the sentence of passage. Read the sentence again and substitute your chosen answer choice for the word it replaces. This gives you:

"He was famous for making decisions on the spur of the moment..." which makes sense and is correct.

Breaking Down Passage Organization

In trying to understand the author's perspective, you will sometimes be asked about how the passage is organized. Many times, the simplest way to find the answer is to note how the opening sentence in a passage or paragraph relates to the rest of the passage. How does the author's main idea get developed and broken down into supporting ideas and statements?

As you go through the answer choices for these organization problems, quiz yourself on each answer choice.

Example:

Question: Which of the following best describes the organization of the author's discussion of this topic?

- A. He provides an example – Ask yourself, is there an example in the question? Don't work exclusively from your memory. Make sure you can go back and actually find the example in the passage.
- B. He makes a comparison – Ask yourself, is there a comparison in the question? Again, go back to the passage and actually find the comparison being made and verify that it exists.
- C. He makes an acknowledgement – Ask yourself, where is the acknowledgement made and to whom?
- D. He discusses a theory – Ask yourself, which theory is being discussed?

After each of these initial questions, remember that it is not enough for them simply to be true, they have to answer the question. Simply

because the author provided an example, doesn't make choice A correct. The example provided may have been to support a comparison that he was making and the comparison may be the main method of organization, which in this case would make answer choice B correct. So always read all the answer choices and only choose the one that is the best, not just the first one you read that is factually correct.

First Word Analysis

When asked for main ideas that best summarize the passage, an easy strategy is to look at the first words in each answer choice and without looking at the rest of the answer choice, see if you could make a decision based on those first words alone.

Example:

Question: Which of the following best explains the author's primary purpose?

- A. dispute...
- B. describe...
- C. condemn...
- D. convince...

If you know that the passage is fairly neutral about the subject, then even if you know nothing else, you can probably eliminate the stronger verbs used in answer choices A, C, and D, leaving you with "describe" or answer choice B as being correct.

Understanding the Intimidation

The test writers will generally choose passages that will be completely foreign to most test takers. You can't expect the passages to be on a topic with which you have any familiarity. If you do happen to come across a passage that you are familiar with, consider yourself lucky, but don't plan on that happening.

The passages will also frequently be drawn from longer passages in books, articles, journals, etc. Therefore, the passage that you will face on the test may almost seem out of context and as though it begins in the middle of a thought process. You won't have a nice title overhead explaining the general topic being covered but will immediately be thrown into the middle of a strange format that you don't recognize.

Also, while the topics chosen may have originally been interesting reading in their original state, after a particular section is pulled and used for the test passage, it will likely be dry and boring.

Getting hit by strange reading topics that you don't recognize, of which you may only have a small part of the original selection, and that are dry and boring can be a bit intimidating if you're not adequately prepared. Just remember that the passages themselves will contain all the information necessary to answer the questions and you don't need any prior knowledge of the topic in order to succeed and do well on the test.

Finding your Optimal Pace

Everyone reads at a different rate. It will take practice to determine what is the optimal rate at which you can read fast and yet absorb and comprehend the information. This is true for both the flyover that you should initially conduct and then the subsequent reading you will have to do as you go through and begin answering the questions. However, on the flyover, you are looking for only a surface level knowledge and are not trying to comprehend the minutia of details that will be contained in the passages.

You can practice with any form of reading material. Read an article at your normal pace and then after you're finished, ask yourself some questions about what you just read and see how well you can comprehend. Experiment with reading articles faster and slower and always gauge how well you comprehended what you read at the end. Train your brain to remember the details and absorb the facts.

With practice, you will find the pace that you should maintain on the test while going back through passages. It should be a comfortable rate. This is not a speed reading exercise. If you have a good pace, and don't spend too much time on any question, you should have a sufficient amount of time to read the different sections of the passages at a comfortable rate. The two extremes you want to avoid are the dumbfounded mode, in which you are lip reading every word individually and mouthing each word as though in a stupor, and the overwhelmed mode, where you are panicked and are buzzing back and forth through the passage in a frenzy and not comprehending anything.

You must find your own pace that is relaxed and focused, allowing you to have time for every question and give you optimal comprehension. Note that you are looking for optimal comprehension, not maximum comprehension. If you spent hours on each word and memorized the passage, you would have maximum comprehension. That isn't the goal though, you want to optimize how much you comprehend with how much time you spend reading. Practice will allow you to determine that optimal rate.

Don't be a Perfectionist

If you're a perfectionist, this may be one of the hardest strategies, and yet one of the most important. The test you are taking is timed, and you cannot afford to spend too much time on any one question.

If you are working on a problem and you've got your answer split between two possible answer choices, and you're going back through the passage and reading it over and over again in order to decide between the two, you can be in one of the most frustrating situations possible. You feel that if you just spent one more minute on the problem, that you would be able to figure the right answer out and decide between the two. Watch out! You can easily get so absorbed in that problem that you lose track of time, get off track and end up spending the rest of the test playing catch up because of all the wasted time, which may leave you rattled and cause you to miss even more questions that you would have otherwise.

Therefore, unless you will only be satisfied with a perfect score and your abilities are in the top .1% strata of test takers, you should not

go into the test with the mindset that you've got to get every question right. It is far better to accept that you will have to guess on some questions and possibly get them wrong and still have time for every question, than to work on every problem until you're absolutely confident in your answer and then run out of time on the last few problems.

Factually Correct, but Actually Wrong

A favorite ploy of question writers is to write answer choices that are factually correct on their own, but fail to answer the question, and so are actually wrong.

When you are going through the answer choices and one jumps out for being factually correct, watch out. Before you mark it as your answer choice, first make sure that you go back to the question and confirm that the answer choice answers the question being asked.

Different Viewpoints

Some passages will express the author's viewpoint on a topic, along with the viewpoint of other experts or other individuals. This can lead to trouble in answering questions though. If asked for the viewpoint of the author, you might go back to the passage, find where a certain viewpoint is expressed, answer the question based on what you read and move on.

For most passages, that would be fine, but when other viewpoints besides the author's are expressed, you have to discern who is

expressing their opinion in the passage. Make sure that if multiple individuals are giving their viewpoint on a topic, that you sort them out for any questions and associate the right viewpoint with the right individual.

Natural Sciences & Physics Test

Elimination

Clearly, the best way to get the right answer to a question is to know how to solve it. If you have studied, it is likely that at least some of the questions you encounter will be a cinch. The right formula will just pop into your head, you'll do a quick calculation, and bingo! You'll see the results of your calculation listed there among the answer choices. You should count your blessings when this occurs, because most questions will involve a tad bit more of a struggle.

One way to reduce the amount of struggle is by eliminating some of the answer choices. Consider the following example:

Water is pumped from the bottom of a petroleum storage tank with a centrifugal pump at a volumetric flow rate of 50 gallons per minute (GPM) to ensure an accurate inventory reading. After all the water is removed from the tank, the pump continues to run for one minute. Calculate the mass of the oil that is pumped out of the tank. (Note: The API gravity of the oil is 30; water density is 8.3 lbs/gallon)

$$\text{API} = 141.5/\text{SPGR} - 131.5$$

SPGR=Specific Gravity

- A. 350 lbs
- B. 400 lbs
- C. 45 gallons

D. 50 gallons

Imagine for a moment that you are not real sure how to answer this question. By following some simple rules of logic, you may be able to discern the correct answer.

First, it is always good practice to underline what you are looking for. In this case, you should underline "mass of oil." Immediately, that should enable you to eliminate two of the answers.

Think "units." Units of measure should always be considered when dealing with a physical science question. Sometimes, this can give you the answer immediately. In this case, it at least narrows down your field of choices.

What are the units of measure for mass? Well, you probably know that answer, but imagine for a minute that you don't. What can you do? First look for clues in the question. Are there any units presented there?

Yes, there are: gallons per minute (GPM) and lbs/gallon. In fact, GPM is specifically stated to be a unit of volumetric flow rate; a fine reminder that "gallons" is a unit of volume.

Now look at the choice of answers. You can choose from lbs or gallons. We know the answer can't be in gallons, because we're not looking for volume. But what if you don't know what a "lbs" is (of course you know it means "pounds", but just pretend for a moment.)

Your only choice now is to start looking at relationships between numbers you are given in the question and the numbers in our two remaining answers. Dealing with round number first, it's easy to see that if we multiply 50 GPM by 8 lbs/gallon, then you get 400 lbs/min. Compare that with the two answers we have left. It looks a lot like answer B, doesn't it? You must be on the right track.

How can you change that lbs/min to lbs? Look at the question one more time for clues.

Aha! "One minute" is the clue you are looking for. If it flows for one minute, then at a rate of 400 lbs/min, the mass of water that flowed must be 400 lbs.

CAUTION: This is the point at which you could make a costly mistake. You found an answer that works, but is it the answer to the question? What did you underline at the beginning?

You calculated the mass of water that would flow in one

Alternative Solution:

- 1.) Assume standard temperature conditions so that specific gravity does not need to be compensated.
- 2.) Understand that specific gravity is the ratio of a substances density compared to water at standard temperature conditions
- 3.) Solve the given equation for SPGR

$$\text{SPGR} = \frac{141.5}{\text{API} + 131.5}$$

$$\text{SPGR} = 0.876$$

- 4.) Calculate the mass of water pumped after 1 minute of flow. (400 lbs.)
- 5.) Assuming the volumetric flow rate of oil will be the same as water, use specific gravity to calculate mass:
 $400 \text{ lbs} \times 0.876 = 350.4 \text{ lbs.}$

minute, but you need the mass of oil. Time for a reality check: what is our only other choice?

That's right. Letter A is your answer. Does it make sense? Well, what weighs more: oil or water? (Hint: Oil floats on water.) Given the same volume of flow, you would expect the mass of oil to be lower, so the answer makes sense.

This has been a simple illustration of how you may work your way through a problem fairly quickly, even when you don't know the "right" way to do it (see alternative solution).

GENERAL TIPS

- 1) Underline or circle the information you need to find to answer the question.
- 2) Pay attention to notes given after the question. They generally hold information that is vital to finding an answer.
- 3) Perform unit analysis whenever possible. Evaluate the units in the answer choices to see if they make sense.
- 4) Use common sense knowledge to eliminate answers (oil weighs less than water, etc.)
- 5) Don't jump on an answer without thinking. There will sometimes be an answer listed that is really a "halfway point." Be careful.

Easy? No!

Please do not be fooled into thinking that you will be able to obtain the right answer every time by following the preceding tips. You still need to study your science.

Please do not be fooled into thinking that you will be able to obtain the right answer every time by following the preceding tips. You still need to study your science. Consider the following question:

Americium, ^{241}Am , spontaneously decays to Neptunium, ^{237}Np , with the emission of an α -particle. If the speed of the α -particle upon emission from an initially stationary americium nucleus is 1.2×10^7 m/s, what is the recoil speed of the neptunium nucleus?

- A. 2.5×10^5 m/s
- B. 2.7×10^5 m/s
- C. 3.5×10^5 m/s
- D. 1.5×10^7 m/s

This one is a little harder to solve. You may still eliminate one answer off the bat. It is reasonable to believe that the recoil speed of the resultant atom is not going to be greater than the speed of the alpha particle, so you can scratch answer D off the list. Three answers still remain, though. If you don't have any idea how to solve this one after

SOLUTION:

$$m_{\text{neptunium}}v_{\text{neptunium}} = m_{\text{helium}}v_{\text{helium}}$$

(Conservation of linear momentum)

Note: α -particle is a helium nucleus

The nuclear masses of each atom can be approximated by their mass numbers (237 and 4).

Therefore, recoil speed of Neptunium is $(4/237)1.2 \times 10^7$ m/s = 2.5×10^5 m/s (Answer A)

half a minute of consideration, it's probably best to skip it and come back later. You can always do a quick guess at the end.

Answering Questions

It is important that you read each question and its corresponding answers very carefully. You must understand what the question is asking. Reading the answers before doing your calculation can be helpful in focusing your attention. For instance, if all of the answers are numerical, that's a good clue that a calculation is involved. If the answers are all textual, then you may save time by not having to perform a calculation.

Consider the following question:

Assuming an initial velocity of $v=6$ ft/sec and a constant volumetric flow rate, what happens to velocity if the diameter of the pipe is cut in half?

- A. $v=4$ ft/sec
- B. $v=9$ ft/sec
- C. $v=12$ ft/sec
- D. $v=16$ ft/sec

The choices of answers to this question reflect that you will have to calculate the change in velocity, testing your knowledge of the equations necessary to do so. But what if the answers are presented as follows?

Assuming an initial velocity of $v=6$ ft/sec and a constant volumetric flow rate, what happens to velocity if the diameter of the pipe is cut in half?

- A. It is $\frac{1}{4}$ as fast
- B. It is $\frac{1}{2}$ as fast
- C. It is 2 times as fast
- D. It is 4 times as fast

You can see the relationship between the new diameter and the old diameter, and you know that velocity will increase as D decreases. This tests your conceptual knowledge without having to know an exact formula. It also saves you time, so read the answers first.

Time to Study

The primary purpose of this book has been to prepare for what you will face on exam day and give you an edge that will help you to excel. Now it's time to make sure your science skills are honed and ready.

If you are like most aspiring optometry students, you have a fairly recent history of using basic science concepts in your undergraduate coursework. This is not always the case, of course. Maybe you decided to take a lengthy hiatus from school before making an attempt to get into optometry school. In either case, it would be very wise to study the material before attempting the exam. The question is: what is the best approach?

There are a large number of facts and concepts required of you on the OAT. To do a comprehensive review of every single subject would basically require you to read several textbooks cover to cover. Who has the time for such inefficiency? You may as well go back to school for a year. If you are taking this exam, then you have knowledge you require in that brain of yours. What you need is a review.

As you're reviewing science topics for this exam, you should have a gut feel for what you know and what you don't. Concentrate on what you don't know. You can use your old textbooks to find information on the topic, or better yet, you can use the world's best information resource for study materials: Google. If you've never used Google before, here are some tips for finding what you need.

First, point your web browser to <http://www.google.com>.

Next, type a word or phrase describing the topic you'd like to research and push the "Google Search" button. You will be given a list of results that contain more information than any single book could ever give you.

Here's an example:

You are reviewing the Electronic Structure knowledge requirements. For some reason, you can't remember learning anything about the Bohr model, so you determine that it is an area of weakness you want to bone up on. You type in "Bohr model" into the Google search field, and you are presented with 120,000 pages of information. There is everything from the nitty gritty, detailed text-book-like information to

interactive flash media presentations explaining the Bohr model of the atom in laymen's terms. You should be able to learn everything you need to know from the first page of results.

SEARCH TIPS

- Be as specific as possible: Instead of typing "Nobel gases", type "Nobel gases chemical properties". This will narrow the search results to the topic you are most interested in.
- Use quotations around phrases: "**simple mercury barometer**" yields better results than **simple mercury barometer**.

Using the phraseology as given in the following knowledge requirements will bring excellent results when searching for material on Google. There is more information than you need, and best of all: it's free!

When studying, remember to focus on just the basics. Fill your mind with the essentials, and nothing more.

Now get to Googling! And good luck!

Getting Ready For Test Day

You're all set to take your OAT! Now here are a few things to remember for test day:

Get there early. Know exactly where the test will be held and how you will get yourself there. Pay attention to traffic reports so that you can compensate for any unexpected issues on the road. Leaving early will mean that you'll be more relaxed; red traffic lights won't raise your stress level, and you won't be pulled over by the first officer who has to fill his speeding ticket quota. And most importantly, you'll have time to use the rest room.

If you've got butterflies in your stomach, feed them! You've already done all the practice tests you can do, and you've had a good night's sleep. Now it's time to get a good, healthy breakfast - though it is wise not to overeat. Your body and mind will need the energy; plus it's distracting to listen to your stomach growl.

Give yourself a massage! Rub your head, neck and shoulders. Place your hand over your heart while taking a very slow, deep breath.

Stay on track. Remember, you don't want to rush, you only want to perform in a timely manner. Although there are time restrictions, if you misread direction, accidentally fill in the wrong answer-choice, or think illogically due to rushing, it won't be worth all the time you save. Remember, haste makes waste! Also, keep in mind that incorrect answers don't count against you, so you can always guess at any answers that you are unsure of. Remember, an educated guess is

better than no guess at all! Moving through a test methodically and efficiently will likely mean that you'll have more time at the end than if you were to rush and stumble, or dawdle over questions that you're struggling with.

Most importantly (at least to your sanity), remember that once it's over, it's over. Clear your mind of it, because you did your best. Go treat yourself to a hot chocolate or an ice cream cone, catch a movie with some friends and relax!

Post OAT

After the OAT, when you've had the time to rest and relax from the stress you put your brain through, take the time to critically evaluate your test performance. This will help you gain valuable insight into how you performed, what sort of score you should be expecting (and therefore what schools will be within your scope for application) and the sort of mindset you'll be expected to utilize when you're actually in optometry school.

Remember, this is neither an opportunity to over-inflate your ego, nor to put yourself down. The main idea is to make your self-evaluation objective and critical, so that you will achieve an accurate view of how things will pan out.

This doesn't mean that you should begin a session of "if only I'd..." or "I shouldn't have..." This will only depress you. The point of this exercise is to keep you grounded, open minded and optimistic.

Soon enough, you'll receive your score, and the applications will start rolling out. Make it an organized procedure, keeping as prepared and informed as you were with your OAT, and this will only lead to a bright, successful optometry career in your future!