The Ultimate Step by Step Guide

to Preparing for the ISEE Upper Level Math Test

Test taker's #1 Choice

ISEE UPPER LEVEL MATH 2020

for Beginners

Reza Nazari

✓ Recommended by Test Prep Experts

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By

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About Effortless Math Education

Effortless Math Education operates the www.effortlessmath.com website, which prepares and publishes Test prep and Mathematics learning resources. Effortless Math authors' team strives to prepare and publish the best quality Mathematics learning resources to make learning Math easier for all. We Help Students Learn to Love Mathematics.

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ISEE Upper Level MATH for Beginners

Get ready to succeed on the ISEE Upper Level no matter your current understanding of math!

The perfect guide for students of every level, ***ISEE Upper Level Math for Beginners*** will help you incorporate the most effective methods and all the right strategies to get ready for your ISEE Upper Level Math test!

This up-to-date guide reflects the 2020 test guidelines and will set you on the right track to hone your math skills, overcome exam anxiety, and boost your confidence. Are you ready to ace the ISEE Upper Level Math test?

ISEE Upper Level Math for Beginners creates confident, knowledgeable students that have all the skills they need to succeed on the ISEE Upper Level. It builds a solid foundation of mathematical concepts through easy-to-understand lessons and basic study guides. Not only does this all-inclusive workbook offer everything you will ever need to conquer the ISEE Math test, but it also contains two full-length and realistic ISEE Upper Level Math tests that reflect the format and question types on the ISEE to help you check your exam-readiness and identify where you need more practice.

With this book, students will learn math through structured lessons, complete with a study guide for each segment to help understand and retain concepts after the lesson is complete. It includes everything from:

- Content 100% aligned with the **2020 ISEE Upper Level test**
- Written by ISEE Upper Level Math tutors and test experts
- **Complete coverage of all ISEE Upper Level Math concepts** and topics on the 2020 ISEE Upper Level test
- **Step-by-step guide** for all ISEE Upper Level Math topics
- Over 500 additional ISEE Upper Level math practice questions in both multiple-choice and grid-in formats with answers grouped by topic (so you can focus on your weak areas)

- Abundant Math skills building exercises to help test-takers approach unfamiliar question types
- **2 full-length practice tests** (featuring new question types) with detailed answers
- And much more!

With this self-study guide, you won't need a math tutor to pave your path to success. ***ISEE Upper Level Math for Beginners*** is the only book you'll ever need to master ISEE Math concepts and ace the ISEE Upper Level Math test!

Ideal for self-study and classroom usage!

Percent of Increase and Decrease

- Percent of change (increase or decrease) is a mathematical concept that represents the degree of change over time.
- To find the percentage of increase or decrease:
  1. New Number – Original Number
  2. (The result ÷ Original Number) × 100
- Or use this formula: Percent of change = $\frac{new\ number - original\ num}{original\ number} \times 100$
- Note: If your answer is a negative number, then this is a percentage decrease. If it is positive, then this is a percentage increase.

Examples:

Example 1. The price of a shirt increases from \$30 to \$36. What is the percentage increase?

Solution: First, find the difference: $36 - 30 = 6$

Then: $(6 \div 30) \times 100 = \frac{6}{30} \times 100 = 20$. The percentage increase is 20%. It means that the price of the shirt increased by 20%.

Example 2. The price of a table decreased from \$50 to \$35. What is the percent of decrease?

Solution: Use this formula:

$Percent\ of\ change = \frac{new\ number - original\ number}{original\ number} \times 100 =$

$\frac{35-}{50} \times 100 = \frac{-15}{50} \times 100 = -30$. The percentage decrease is 30. (the negative sign means percentage decrease) Therefore, the price of the table decreased by 30%.

Discount, Tax and Tip

- To find the discount: Multiply the regular price by the rate of discount
- To find the selling price: Original price – discount
- To find tax: Multiply the tax rate to the taxable amount (income, property value, etc.)
- To find the tip, multiply the rate to the selling price.

Examples:

Example 1. With an 20% discount, Ella saved $50 on a dress. What was the original price of the dress?

Solution: let x be the original price of the dress. Then: $20\ \%\ of\ x = 50$. Write an equation and solve for x: $0.20 \times x = 50 \rightarrow x = \frac{50}{0.20} = 250$. The original price of the dress was $250.

Example 2. Sophia purchased a new computer for a price of $820 at the Apple Store. What is the total amount her credit card is charged if the sales tax is 5%?

Solution: The taxable amount is $820, and the tax rate is 5%. Then:

$$Tax = 0.05 \times 820 = 41$$

$$Final\ price = Selling\ price + Tax \rightarrow final\ price = \$820 + \$41 = \$861$$

Example 3. Nicole and her friends went out to eat at a restaurant. If their bill was $60.00 and they gave their server a 15% tip, how much did they pay altogether?

Solution: First, find the tip. To find the tip, multiply the rate to the bill amount. $Tip = 60 \times 0.15 = 9$. The final price is: $\$60 + \$9 = \$69$

Simple Interest

- Simple Interest: The charge for borrowing money or the return for lending it.
- Simple interest is calculated on the initial amount (principal).
- To solve a simple interest problem, use this formula:

$Interest = principal \times rate \times time \quad (I = p \times r \times t = prt)$

Examples:

Example 1. Find simple interest for \$200 investment at 5% for 3 years.

Solution: Use Interest formula:
$I = prt$ ($P = \$200$, $r = 5\% = \frac{5}{100} = 0.05$ and $t = 3$)
Then: $I = 200 \times 0.05 \times 3 = \$30$

Example 2. Find simple interest for \$1,200 at 8% for 6 years.

Solution: Use Interest formula:
$I = prt$ ($P = \$1{,}200$, $r = 8\% = \frac{8}{100} = 0.08$ and $t = 6$)
Then: $I = 1{,}200 \times 0.08 \times 6 = \$576$

Example 3. Andy received a student loan to pay for his educational expenses this year. What is the interest on the loan if he borrowed \$4,500 at 6% for 5 years?

Solution: Use Interest formula: $I = prt$. $P = \$4{,}500$, r = 6% = 0.06 and $t = 5$
Then: $I = 4{,}500 \times 0.06 \times 5 = \$1{,}350$

Example 4. Bob is starting his own small business. He borrowed \$20,000 from the bank at an 8% rate for 6 months. Find the interest Bob will pay on this loan.

Solution: Use Interest formula:
$I = prt$. $P = \$20{,}000$, $r = 8\% = 0.08$ and $t = 0.5$ (6 months is half year). Then:

$$I = 20{,}000 \times 0.08 \times 0.5 = \$800$$

Chapter 5: Practices

Solve each problem.

1) What is 15% of 60? ____
2) What is 55% of 800? ____
3) What is 22% of 120? ____
4) What is 18% of 40? ____
5) 90 is what percent of 200? ____%
6) 30 is what percent of 150? ____%
7) 14 is what percent of 250? ____%
8) 60 is what percent of 300? ____%
9) 30 is 120 percent of what number? ____
10) 120 is 20 percent of what number? ____
11) 15 is 5 percent of what number? ____
12) 22 is 20% of what number? ____

Solve each problem.

13) Bob got a raise, and his hourly wage increased from $15 to $21. What is the percent increase? _____ %

14) The price of a pair of shoes increases from $32 to $36. What is the percent increase? ___ %

15) At a coffee shop, the price of a cup of coffee increased from $1.35 to $1.62. What is the percent increase in the cost of the coffee? _____ %

16) A $45 shirt now selling for $36 is discounted by what percent? _____ %

17) Joe scored 30 out of 35 marks in Algebra, 20 out of 30 marks in science and 58 out of 70 marks in mathematics. In which subject his percentage of marks is best? _____

18) Emma purchased a computer for $420. The computer is regularly priced at $480. What was the percent discount Emma received on the computer? _____

19) A chemical solution contains 15% alcohol. If there is 54 ml of alcohol, what is the volume of the solution? _____

Find the selling price of each item.

20) Original price of a computer: $600

Tax: 8%, Selling price: $_____

21) Original price of a laptop: $450

Tax: 10%, Selling price: $_____

22) Nicolas hired a moving company. The company charged $500 for its services, and Nicolas gives the movers a 14% tip. How much does Nicolas tip the movers? $_____

23) Mason has lunch at a restaurant and the cost of his meal is $40. Mason wants to leave a 20% tip. What is Mason's total bill, including tip? $_____

Determine the simple interest for the following loans.

24) $1,000 at 5% for 4 $year$.$___

25) $400 at 3% for 5 $years$.$___

26) $240 at 4% for 3 $years$.$___

27) $500 at 4.5% for 6 years.$___

Solve.

28) A new car, valued at $20,000, depreciates at 8% per year. What is the value of the car one year after purchase? $_____

29) Sara puts $7,000 into an investment yielding 3% annual simple interest; she left the money in for five years. How much interest does Sara get at the end of those five years? $_____

Chapter 5: Answers

1) 9
2) 440
3) 26.4
4) 7.2
5) 45%
6) 20%
7) 5.6%
8) 20%
9) 25
10) 600
11) 300
12) 110
13) 40%
14) 12.5%
15) 20%
16) 20%
17) Algebra
18) 12.5%
19) 360 ml
20) $648.00
21) $495.00
22) $70.00
23) $48.00
24) $200.00
25) $60.00
26) $28.80
27) $135.00
28) $18.400
29) $1,050