GST BOCES
Adult Education and Career Services

Preparing for the TABE

Test of Adult Basic Education

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TABE Test Preparation

Essentially, the Test of Adult Basic Education (TABE) is a placement test that is used by educational institutions and employers to give them a good idea of what level of academic skills you have. The test covers the basics of reading and math. GST BOCES offers the TABE test for several reasons:

- Entrance requirement for a career or vocational training program (minimum TABE scores may apply)
- First step in entering programming to earn your high school equivalency diploma
- Screening tool for area employers to determine applicants' strengths

One thing to keep in mind is that you cannot fail the TABE. Based on your test scores, BOCES will decide if you are up to the challenge of a career or vocational training without further preparation or if you need remedial courses in reading or math to make sure you are set up for success. If you are entering High School Equivalency prep classes, the TABE assessment will target the skills in which you need instruction in order for you to pass the TASC™ exam and earn your high school equivalency diploma.

Although it is not necessary for you to study for the TABE assessment, the following pages provide you with test taking tips, sample questions that are similar to the questions found on the TABE test, and links to online resources to help you prepare for the assessment. Remember that this is just practice. An answer key is provided in the back of this book.

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Test Taking Tips

⇒Get a good night's sleep the night before.

⇒Be positive and do your best.

⇒Relax. It is normal to be a bit nervous prior to taking a test. Don't worry; you cannot fail the TABE assessment.

⇒Make sure to listen carefully to the instructions and understand them.

⇒Read all directions. Ask questions if you do not understand them.

⇒Don't spend too much time on any one test question. Skip it and return to it later as time allows, or make your best guess and move on to the next question.

⇒Make sure you answer all questions.

⇒There are no trick questions on the TABE assessment; do not read into a question something that is not there.

⇒When marking your answers on the answer sheet, make sure you mark the circle that goes with the answer you choose. Be sure to fill in the answer circles neatly and completely.

⇒Trust your instincts; your first answer is most likely the best answer. Only change an answer when you are certain that you incorrectly marked it.

⇒The TABE is multiple choice. Rule out answer choices that you know are incorrect, and then mark your best guess.

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Online Resources to Help You Prepare for the TABE Assessment

http://www.mathpower.com/

http://www.mdc.edu/main/images/PERT_College-Ready_Booklet_Math_tcm6-75236.pdf

http://www.proprofs.com/quiz-school/story.php?title=practice-tabe-level-d-timed

http://www.khanacademy.org/

www.math.com

http://www.neok12.com/

READING SAMPLE QUESTIONS

I. Study the table and choose the best possible answers

The following table gives the caloric expenditure after 10 minutes of activity for various body weights. This data was obtained from Reebok Instructor News, Volume 4, Number 2, 1991.

Activity & Calories/min	120 lbs	140 lbs	160 lbs	180 lbs
Aerobics (Traditional)	7.4	8.6	9.8	11.1
Basketball	7.5	8.8	10.0	11.3
Bowling	1.2	1.4	1.6	1.9
Cycling (10 mph)	5.5	6.4	7.3	8.2
Golf (pull/carry clubs)	4.6	5.4	6.2	7.0
Golf (power cart)	2.1	2.5	2.8	3.2
Hiking	4.5	5.2	6.0	6.7
Jogging	9.3	10.8	12.4	13.9
Running	11.4	13.2	15.1	17.0
Sitting Quietly	1.2	1.3	1.5	1.7
Skating (ice and roller)	5.9	6.9	7.9	8.8
Skiing (cross country)	7.5	8.8	10.0	11.3
Skiing (downhill and water)	5.7	6.6	7.6	8.5
Swimming (crawl and moderate pace)	7.8	9.0	10.3	11.6
Tennis	6.0	6.9	7.9	8.9
Walking	6.5	7.6	8.7	9.7
Weight Training	6.6	7.6	8.7	9.8

1. Which weight class burns the most calories by running?
   a. 120
   b. 140
   c. 160
   d. 180

2. Which two exercises will burn the most calories in the 140-weight class?
   a. Jogging and aerobics
   b. Running and cycling
   c. Jogging and running
   d. Hiking and skiing

3. Which activity burns a little less than double that of bowling in the 120-weight class?
   a. Golf (power cart)
   b. Golf (pull/carry clubs)
   c. Tennis
   d. Hiking

1. (A) (B) (C) (D)
2. (A) (B) (C) (D)
3. (A) (B) (C) (D)

Mark your answers here.

You can check your answers on page 12

READ THE FOLLOWING:

II. Read the paragraphs below and then choose the best answer for question 1.

Nursing is, in general, the process of caring for or nurturing another individual. More specifically, nursing refers to the functions and duties carried out by persons who have had formal education and training in the art and science of nursing. Formal nursing education in the United States had its antecedents in Europe and England.

One of the first formal training programs for nurses was begun in 1836 in Kaiserswerth, Germany, by Pastor Theodor Fliedner for the Order of Deaconesses. Other religious orders were also providing formalized training for nurses in Europe at that time, but Fliedner's school is noteworthy for having given the British nursing reformer Florence Nightingale her formal training. Her experience at Kaiserswerth gave her the impetus to organize nursing care on the battlefields of the Crimean War and, later, to establish a nursing training program at Saint Thomas's Hospital in London.

In the late 1800s training schools patterned after this model were established in the United States. Originally, nurses received little or no classroom preparation. Most of the training was based on apprenticeship, with older students teaching the younger ones how to care for patients. All programs were directed by hospitals, and nursing students provided low-cost service to the institutions; upon graduation, most of them worked as private-duty nurses in patients' homes. (Taken from Encarta Encyclopedia)

1. Identify the main idea of the entire passage:

   A. Nursing is defined as the caring for or nurturing of another individual.

   B. Florence Nightingale was trained in Germany.

   C. Nursing education in Europe and the United States is quite similar.

   D. The religious history of nursing is interesting.

1. (A) (B) (C) (D)

Mark your answer here.

You can check your answers on page 12

III. Study these three ads, which might appear in a local college newspaper, then answer the questions below.

Animal Care Tech looking for hard working person to work w/ reptiles & rodents. Will train, PT to start with more hrs. later. Must be drug free. Start at $5.50/hr. Flex hrs. Please call 555-555-5555 between 9-4 M-F.

Certified Nursing Assistant needed FT for elderly male in-home care. M-F 8-5 $200/wk. Drug test required. Must be certified. Call 555-555-5512

LIKE TO WORK WITH LUXURY CARS?

Shop helper, M-F 1 pm-6 pm, alt Sat 10-4.
Fall/Spring. Must be at least 21, clean driving record, drug free, pers ref, pre-emp screening. Some exp nec. Live close. Please call 555-555-5551.

1. What similarities do the three advertisements share?

   A. Applicants can expect to do a drug test.

   B. Salary is just above minimum wage.

   C. All must be 21 or older.

   D. All offer flexible hours.

2. Which position does not require previous training or experience?

   A. Animal Care Technician

   B. Certified Nurses Assistant

   C. Shop Helper

   D. Both Animal Care Technician and Shop Helper

3. Which two ads might appeal to a full-time college student with morning classes?

   A. All three positions are possible for consideration.

   B. Animal Care and Certified Nurses Assistant

   C. Certified Nurses Assistant and Shop Helper

   D. Animal Care and Shop Helper

1.	A	B	C	D
2.	A	B	C	D
3.	A	B	C	D

Mark your answers here.

You can check your answers on page 12

MATHEMATICS SAMPLE QUESTIONS

I. Read each question and choose the best answer.

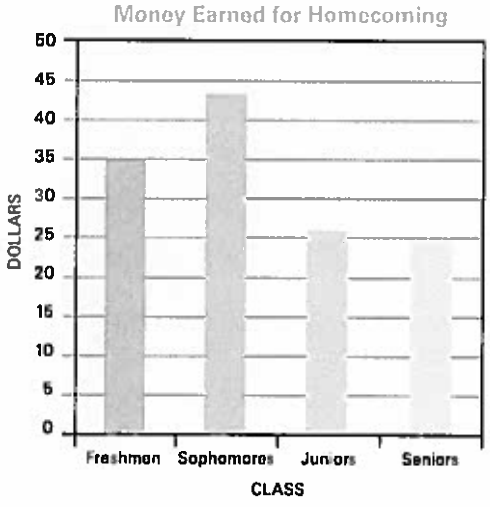
1. An airplane flying at an altitude of 32,000 feet descends at a rate of 1,300 feet per minute. If the plane descends for 15 minutes, what would its altitude be in feet?

   A. 10,000 ft.
   B. 12,500 ft.
   C. 19,000 ft.
   D. 19,500 ft.

2. The angle of the roof on Wendy's dollhouse is 56°. She built a scale model of the dollhouse with a scale ratio of 1:4. What is the measure of the angle of the roof of the model she built?

   A. 14°
   B. 34°
   C. 56°
   D. 224°

3. The students at Miami Senior High School are raising money for homecoming. The graph below shows the amount of money each class has raised so far. About what percentage of the money raised did the sophomore class earn?



   A. 25%
   B. 33%
   C. 43%
   D. 50%

1. A B C D
2. A B C D
3. A B C D

Mark your answers here.

You can check your answers on page 12

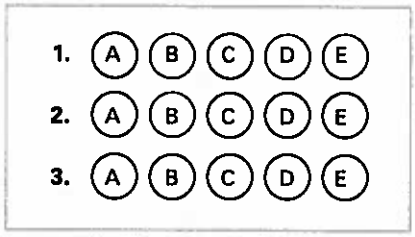
II. Solve the following problems and write your answers on the answer sheet.

1. 612
   x 4

   A. 2848
   B. 2408
   C. 2448
   D. 1658
   E. None of the above

2. 301
   x 9

   A. 2709
   B. 2799
   C. 2409
   D. 2499
   E. None of the above



You can check your answers on page 12

3. 44 x 12 =

   A. 132
   B. 4488
   C. 428
   D. 528
   E. None of the above

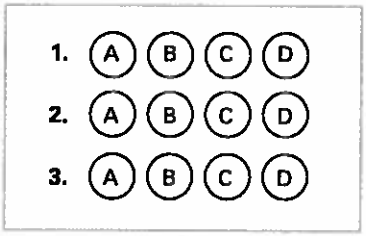
III. Choose the best answer to each question.

1. Find 20% of 65.

   A. 130
   B. 1.3
   C. 13
   D. 0.13

2. ____% of 80 is 20.

   A. 4%
   B. 25%
   C. 40%
   D. 2.5%



You can check your answers on page 12

3. What is 15% of $30?

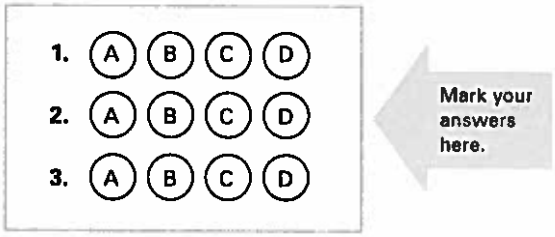
   A. $45
   B. $4.50
   C. $.45
   D. $.04

IV. Choose the best answer to each question.

1. $6-(2)(3) =$
   - A. 12
   - B. 0
   - C. 8
   - D. 6

2. $9 + 15 + 3 =$
   - A. 8
   - B. 4
   - C. 24
   - D. 14

3. $5(7-2)5 =$
   - A. 25
   - B. 125
   - C. 250
   - D. 625



You can check your answers on page 12

Answer Key

Reading

I-1	D
I-2	C
I-3	A
II-1	C
III-1	A
III-2	A
III-3	D

Mathematics

I-1	B
I-2	C
I-3	B
II-1	C
II-2	A
II-3	D
III-1	C
III-2	B
III-3	B
IV-1	B
IV-2	D
IV-3	B

What are Fractions?

Fractions are parts of whole items. When you write a fraction, the total pieces (the whole) on the bottom and the part goes on the top.

Forms of Fractions

Improper fractions have a larger numerator (top number) than the denominator (bottom number) Improper fractions can also have the same numerator and denominator. Proper fractions have a smaller top number than bottom number. A fraction is considered Mixed when it contains a whole number and fraction.

Tell whether each of the following is an improper fraction ("I"), a mixed number ("M"), or a proper fraction ("P").

1) $\frac{8}{11}$ _____ 2) $\frac{13}{5}$ _____ 3) $2\frac{3}{4}$ _____

4) $\frac{10}{10}$ _____ 5) $\frac{3}{5}$ _____ 6) $7\frac{5}{9}$ _____

7) $\frac{5}{6}$ _____ 8) $\frac{11}{2}$ _____ 9) $\frac{8}{8}$ _____

Reducing Fractions

Fractions must always be written in the "reduced" form, or the smallest numbers possible. There are <u>two ways to reduce fractions</u>. For PROPER fractions, the top AND bottom numbers must be divided by the same number, for example:

$$\frac{4}{6} \div \frac{2}{2} = \frac{2}{3}$$

For IMPROPER fractions the top must be divided into the bottom, as in: ***6/2 = 6 ÷ 2 = 3***

Reduce the following fractions:

1) $\frac{4}{8}$ _____ 2) $\frac{3}{9}$ _____ 3) $\frac{7}{14}$ _____

4) $\frac{3}{12}$ _____ 5) $\frac{2}{16}$ _____ 6) $\frac{8}{16}$ _____

7) $\frac{9}{15}$ _____ 8) $\frac{5}{5}$ _____ 9) $\frac{9}{81}$ _____

Changing a Mixed Fraction to an Improper Fraction

In order to multiply a whole number by a mixed number or fraction, you must first have two fractions (in order to "go across"). A mixed number can be rewritten as an improper fraction by multiplying the bottom of the fraction by the whole number and adding the top of the fra $2 \times 4 + 1 = 9/4$ *OR* $(4 \times 2) + 1 = 9/4$

Rewrite the following mixed numbers as improper fractions.

1) $3\frac{1}{4}$ 2) $7\frac{2}{9}$ 3) $2\frac{5}{6}$

Changing an Improper Fraction to a Mixed Number

Unless otherwise stated, if a fraction is improper, it must be divided and made into a mixed number. When dividing the improper fraction, remember that the top number always goes inside of the bracket (TIBO–"Top in, bottom out"). For example, in $\frac{10}{3}$

$$3\overline{)10}$$

Answer: fraction method-read, starting at the top, and go clockwise: 3 1 3, or 3 1/3.

$$\begin{array}{r} 3 \\ 3\overline{)10} \\ \underline{9} \\ 1 \end{array}$$

Answer: remainder method-read top "3" with "1" left over, or "remaining", or 3 r 1.

Rewrite the following improper fractions as mixed numbers .

1) $\frac{7}{3}$ 2) $\frac{13}{10}$ 3) $\frac{9}{2}$ 4) $\frac{14}{5}$ 5) $\frac{9}{6}$ 6) $\frac{14}{4}$

In order to work fractions you need to know these 3 basic rules:

+/-	Bottoms the same
x	Go across
÷	Flip 2nd THEN "x" (go across)

Cross cancelling is basically simplifying before you multiply, but, don't just simplify the fractions the normal way, instead cross-cancel. Cross-cancelling also makes it easier to multiply if using large numbers.

Cross Cancelling means that if the numerator of one fraction and the denominator of the other fraction have a common factor that can be divide

$$\frac{\cancel{2}^{1}}{3} \times \frac{1}{\cancel{4}_{2}} = \frac{1 \times 1}{3 \times 2} = \frac{1}{6}$$

Cancel the following.

1) $\frac{1}{14} \times \frac{7}{10} =$ 2) $\frac{5}{12} \times \frac{2}{15} =$

3) $\frac{7}{15} \times \frac{3}{14} =$

4) $\frac{7}{15} \times \frac{3}{8} \times \frac{5}{12}$

Multiply the following. Reduce if possible.

1) $\frac{1}{3} \times \frac{2}{5} =$

2) $4\frac{2}{5} \times \frac{1}{4} =$

3) $\frac{2}{3} \times \frac{3}{4} =$

4) $2\frac{1}{3} \times 3\frac{2}{7} =$

In order to divide fractions, you flip the 2nd fraction upside down, then multiply across:

$\frac{1}{3} \div \frac{1}{2} = \frac{1}{3} \times \frac{2}{1} = \frac{2}{3}$

Divide the following fractions. Reduce if possible.

1) $\frac{2}{3} \div \frac{1}{3} =$

2) $\frac{4}{5} \div \frac{2}{7} =$

3) $\frac{2}{5} \div \frac{1}{4} =$

4) $\frac{1}{3} \div 5 =$

Adding and Subtracting Like Fractions

When adding and subtracting fractions the bottoms (denominators) must be the same. When they are the same, add the numerator and leave the denominator.

Add the following fractions. Reduce if necessary.

1) $\frac{1}{5} + \frac{2}{5} =$

2) $\frac{3}{6} + \frac{4}{6} =$

3) $\frac{3}{7} + \frac{1}{7} =$

4) $3\frac{6}{7} + 3\frac{3}{7} =$

5) $\frac{1}{4} + \frac{3}{4} =$

6) $4\frac{5}{8} - 1\frac{3}{8} =$

Adding and Subtracting Unlike Fractions

When adding and subtracting fractions, if the bottom is NOT the same, they must be MADE to be the same.

in the problem . $\frac{1}{8} + \frac{1}{4}$ ***The denominators are different; find the new denominator***

Re-write as like fractions using 8 as the "new" denominator
(because 8 is the first multiple of either number that is evenly divisble by both)

$\frac{1}{8} + \frac{1}{4} = \frac{1}{8} + \frac{?}{8}$

Remember, the number you mulipiy the 4 by to get to the new denomonator, must also be multiplied by the top number as welll

$\frac{1}{8} + \frac{2 \times 1}{2 \times 4} \qquad \frac{1}{8} + \frac{2}{8} = \frac{3}{8}$

Add or subtract the following fractions. Determine common denominators where needed. Reduce if necessary.

1) $3\frac{3}{8} + \frac{1}{4}$ 2) $\frac{3}{5} + \frac{1}{15}$ 3) $\frac{2}{3} - \frac{1}{6}$

Fractions-Review

Rewrite the following improper fractions as mixed numbers.

1) $\frac{7}{2}$ 2) $\frac{12}{5}$ 3) $\frac{4}{3}$ 4) $\frac{15}{7}$

Rewrite the following mixed numbers as improper fractions.

5) $5\frac{2}{3}$ 6) $3\frac{1}{5}$ 7) 4

Reduce the following fractions.

8) $\frac{5}{2}$ 9) $\frac{2}{8}$ 10) $\frac{7}{21}$ 11) $\frac{13}{7}$

Multiply or divide the following fractions. Reduce if necessary.

12) $\frac{1}{4} \times 3 =$ 13) $\frac{2}{3} \times \frac{3}{8} =$

14) $\frac{2}{7} \div \frac{1}{4} =$ 15) $2\frac{1}{3} \div 3 =$

Add the following fractions. Reduce if necessary.

16) $\frac{1}{7} + \frac{2}{7} =$

17) $\frac{3}{8} + \frac{7}{8} =$

Add or subtract the following fractions, making the denominators the same. Borrow or reduce if necessary.

18)
$$\begin{array}{r} 2\ \frac{7}{8} \\ +\ 1\ \frac{3}{4} \\ \hline \end{array}$$

19)
$$\begin{array}{r} 7\ \frac{3}{4} \\ -\ 2\ \frac{7}{12} \\ \hline \end{array}$$

20)
$$\begin{array}{r} 5\ \frac{1}{4} \\ -\ 2\ \frac{1}{12} \\ \hline \end{array}$$

21)
$$\begin{array}{r} 5\ \frac{1}{6} \\ -\ 3\ \frac{2}{9} \\ \hline \end{array}$$

Adding and Subtracting Decimals

In order to work decimals you need to know these 3 basic rules:	+/-	Line up decimals; add zeros
	X	Add decimals LAST
	÷	No decimals OUTSIDE

In order to add and subtract decimals, you have to line up the decimals AND add zeros so that the same number of decimals will be on each line as follows:

3 . 5 - 1 . 7 3 4

$$\begin{array}{r} 3.5 \\ -\,1.734 \end{array}$$

$$\begin{array}{r} {\scriptstyle 2\ \ 14\ \ 9\ \ 10} \\ 3.5\,\not{0}\,\not{0} \\ -\,1.734 \\ \hline 1.766 \end{array}$$

Add or subtract the following decimals. Use the boxes in 1-4 to keep numbers lined up.

1) 134.2 - 0.002 2) 526 - 1.37 3) 5.693 + 35.1 4) 4 + 1.5 + 0.003

Multiplying Decimals

+/-	Line up decimals; add zeros
X	Add decimals LAST
÷	No decimals OUTSIDE

In order to multiply decimals you do NOT have to line them up. In fact, you just multiply the numbers as though the decimals WERE NOT THERE at all! Then, after you have your answer, you add the decimals by counting the TOTAL number of digits AFTER the decimal point on both lines, starting at the right of the answer and going left. For example:

1 . 2	. 1 2	1 . 2	. 1 2	1 2
x 4 . 1	x . 4 1	x . 4 1	x 4 . 1	x . 4 1
1 2	1 2	1 2	1 2	1 2
4 8	4 8	4 8	4 8	4 8
4 9 2	4 9 2	4 9 2	4 9 2	4 9 2
add 2	*add 4*	*add 3*	*add 3*	*add 2*
4 . 9 2	**. 0 4 9 2**	**. 4 9 2**	**. 4 9 2**	**4 . 9 2**

Notice that on each problem the answer is the same BEFORE the decimals are added.

Mutiply the following decimal problems.

1) 0 . 7 2 x . 0 5

2) 2 6 x . 3

3) 1 . 2 9 x 3 4

4) . 0 0 2 x . 0 8

5) 2 . 2 3 x . 0 2

6) 0 . 1 3 5 x . 4

7) 1 . 0 3 x . 0 7

8) 2 . 3 1 x 8 2

Dividing Decimals

In order to divide decimals, no decimals can be on the OUTSIDE of the bracket. In order to get RID of any outside-the-bracket decimals you move each decimal OUTSIDE the bracket one space to the right until there are no decimals AND one space to the right on the INSIDE-the-bracket number to match, as follows.

$0.3\overline{)1.9276}$ *so you get* $3\overline{)19.276}$ *Then put to decimal up where it goes and forget about it.* $3\overline{)19.276}$

Now work the problem as a regular division problem.

Work the following decimal division problems.

1) $0.3\overline{)0.129}$ 2) $.11\overline{)1.43}$ 3) $0.27\overline{)8.1}$

It is important to note that, once the decimal has been written on the top, a number has to be in EACH space after the decimal point, even if it is a zero. For example:

$0.3\overline{)0.027}$ *so you get* $3\overline{)0.27}$ $3\overline{).9$ $3\overline{)0.27}$ $3\overline{).09$ $3\overline{)0.27}$

3 will not go into 2, but it will go into 27 9 times...

...a zero MUST go in front of the 9.

If a number does not have a decimal written, it can be added onto the right end, as it is written in the case of money. For example:

$0.3\overline{)36}$?

A decimal point can be added after the 6.

$0.3\overline{)36.}$

The decimal points on the outside and inside can then be moved one space to the right.

$$\begin{array}{r} 12 \\ 3\overline{)360} \\ -3 \\ \hline 06 \\ -6 \\ \hline 0 \end{array}$$

$$\begin{array}{r} 120 \\ 3\overline{)360} \\ -3 \\ \hline 06 \\ -6 \\ \hline 00 \\ \hline 0 \end{array}$$

Remember to bring down the zero and finish the problem!

Work the following decimal division problems. *(NOTE: If no decimal is "outside," simply write the decimal point on the answer line above it; there is no need to move decimals points.)*

4) $0.5\overline{)0.035}$ 5) $1.2\overline{)0.0156}$ 6) $0.003\overline{)0.00315}$

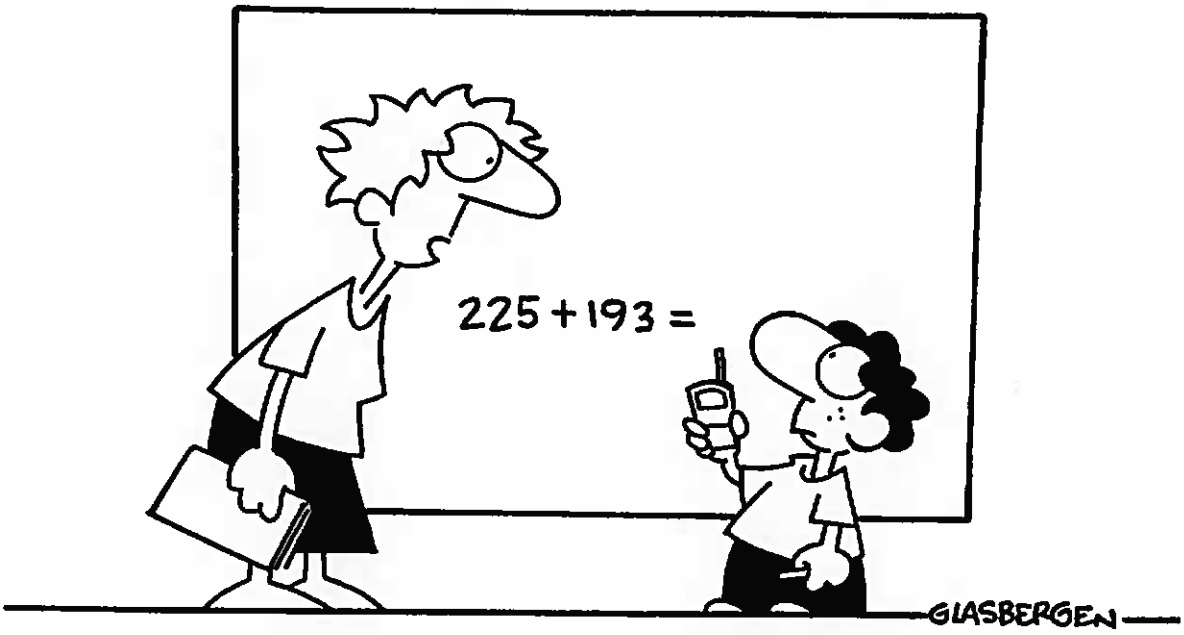
7) $6\overline{)64.32}$ 8) $5\overline{)0.465}$ 9) $6\overline{)3.042}$

Decimal Review

1) $0.13\overline{)2600}$ 2) $15\overline{)6}$ 3) $\frac{5}{0.8}$ 4) $35\overline{)7}$

5) (1.2)(2.5) = 6) $26 \times .3$ 7) 1.09×34 8) $.003 \times .07$

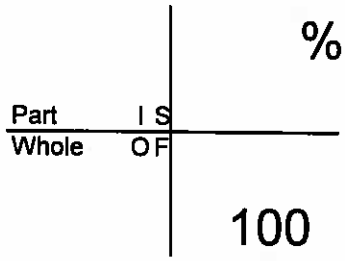
9) $83.52 \div 1.6$ 10) $3.025 \div 5$ 11) $\frac{7}{140}$ 12) $45 \div 1.5$



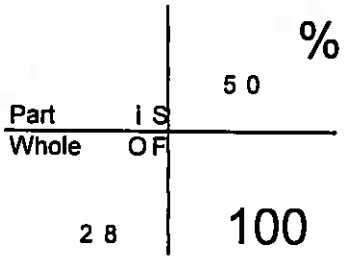
"You have to solve this problem by yourself. You can't call tech support."

Percents

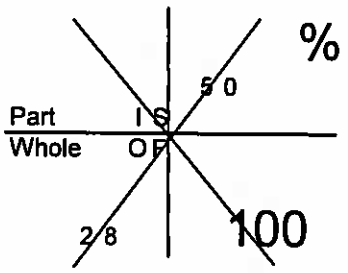
In order to work percent problems the simplest way is to use the chart below.



If the problem reads "find <u>50 %</u> <u>of 28</u> " you fill in the block, placing 50 in the "%" box and 28 in the "OF" box as follows.



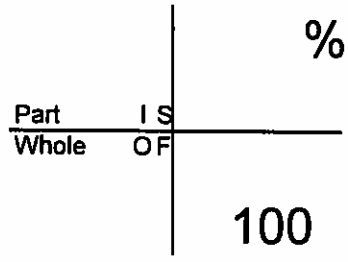
Next, pretend there is a big "X" over the box. Where the "X" crosses 2 numbers, multiply them on top of a fraction; place the number that is left alone on the bottom of the fraction as follows.



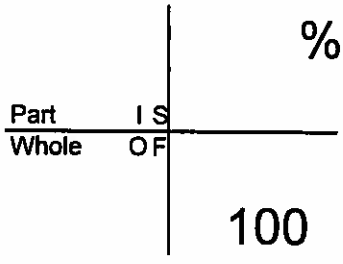
$$\frac{50 \times 28}{100} = \frac{1400}{100} = 14$$

Calculate the missing number in the following percent problems.

1. 25% of what number is 10?



2. What is 8% of 320?



Calculate the missing number in the following percent problems.

1) 3 is what percent of 15?

2) 20% of what number is 5?

3) 40% of 65 = _____

4) 2.5% of what number is 0.4?

5) 12 1/2% of what number is 25?

6) 25% of what number is 125?

7) What is 32% of 200?

8) 40% of what number is 46?

9) 128 is 50% of what number?

10) What is 75% of 536?

11) 2.5% of what number is 5?

12) 3 is what percent of 2.5?

13) 40% of 35 = _____

14) 32 is 50% of what number?

15) 25% of what number is 20?

16) What is 8% of 50?

17) 4.5 is what percent of 15?

18) 25% of what number is 28?

Signed Numbers

Rules regarding signed numbers		
	+ -	*One sign per number; Bank account ("+" deposit and "-" spend).*
	x ÷	*Work the number FIRST (WITHOUT using signs). Every two negatives cancel; if one is left over, the whole answer is negative.*

The first step in adding and subtracting signed numbers is to make sure there is only ONE sign in front of each number. If more than one sign exists, rewrite with one sign, using the rule that

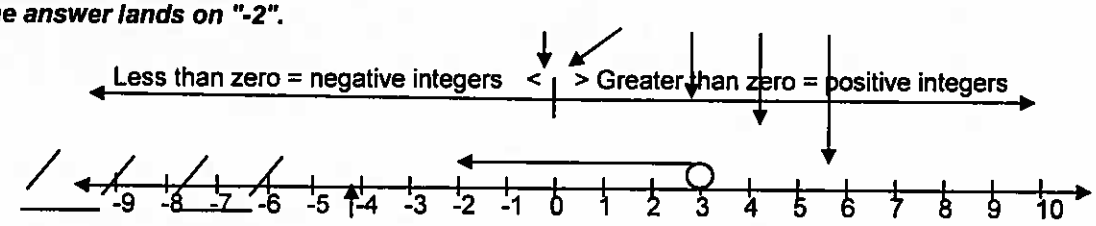
two of the same sign equals "+"
different signs equals "-"

For example, in 5 - + 2 = *the 5 is positive (no sign is always positive), but the 2 has both a - and + in front of it. Since the - and + are different, they will be changed to a " - ", and rewritten* 5 - 2 =.

Rewrite the following equations with only one sign per number.

1. $-6 - {}^{-}4 =$ _____
2. $8 + {}^{-}9 =$ _____
3. $-7 + {}^{-}3 =$ _____
4. $-2 - {}^{-}5 =$ _____

However, before actually calculating problems, it is essential that positives and negatives be understood. To write the equation "3 -5 = ?", begin on "3". The "-5" means back 5. On the number line, the answer lands on "-2".

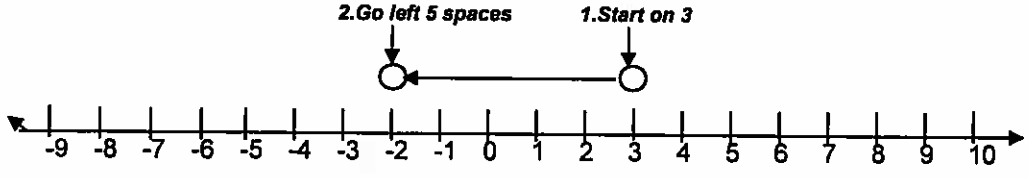


The "greater than" sign points on the number line to the greater numbers. The "less than" sign points to the lesser/smaller numbers.

Answer the following Inequality problems, putting <, =,or > in the box.

5. 7 ☐ 2
6. -4 ☐ 9
7. -6 ☐ -2
8. -3 ☐ 0
9. -4 ☐ -1
10. 5 ☐ -3
11. 0.3 ☐ 0.35
12. -0.4 ☐ -0.42

To solve the equation "3 -5 = ?", begin on "3". The "-5" means back 5. On the number line, the answer lands on "-2".



Solve the following signed number problems

1) $-16 \div -4 =$

2) $-27 \div 9 =$

3) $18 \div -6 =$

4) $-2 - {}^{-}9 =$

5) $-1 + 4 =$

6) $-6 - {}^{-}3 =$

7) $9 + {}^{-}6 - 2 =$

8) $5 + {}^{-}12 =$

9) $-11 - {}^{-}5 =$

10) $-4 \times -6 =$

11) $5 \times -8 =$

12) $-6 \times 8 =$

13) $-11 \times 6 =$

14) $7 \times 8 =$

15) $-3 \times -9 =$

16) $-15 \div -3 =$

17) $-42 \div -6 =$

18) $45 \div -5 =$

19) $-32 \div 8 =$

20) $\frac{-16}{4}$

21) $\frac{-50}{-25}$

ORDER OF OPERATIONS

Applying the rules of Order of Operations to numerical expressions:

Please Excuse My Dear Aunt Sally is a phrase used to help you remember the order that equations must be solved in!

Parentheses (*p lease*)
Exponents (*e xcuse*)
Multiplication (*m y*) and **D**ivision (*dear*) (Work from Left to Right)
Addition (*a unt)* and **S**ubtraction (*Sally*) (Work from Left to Right)

Simplify each expression by performing the operations in the proper order.

1. $7(2 + 7) - 15$
2. $8 + 2(9 - 2)^2$
3. $6(7 - 1) + (3 + 11)$
4. $45 \div (9 + \bar{}6) - 1$
5. $11 + (6 \div 2) - 7$
6. $4(12 - 5) - 13$
7. $(32 + 4) \div 9 + 10$
8. $5 \times 5 - 3 \times 2$
9. $11(9 - 5) - (8 \div \bar{}2)$
10. $4(28 - 21) \div 3$
11. $17 - 3(19 - 14)$
12. $4x13 + 51 \div 3$

Powers, Exponents and Square Roots

A "power" is a short-cut for when a number is about to be multiplied a given number of times. For example, 3 x 3 x 3 x 3 x 3 can be written as 3^5, which is much quicker to write. When written as 3^5, the "3" is called the base (the number being multiplied) and the "5" is called the exponent (telling how many times the base will be multiplied.) The power 3^5 would be read "3 to the 5th power".

Write the following as a power.

1. 4 x 4 x 4 x 4 x 4 x 4 _____
2. 2 x 2 x 2 x 2 x 2 x 2 x 2 _____
3. 7 x 7 x 7 _____
4. 8 x 8 x 8 x 8 x 8 _____

Write out the following powers in long form.

5. 5^4 _____
6. 6^2 _____
7. 3^5 _____
8. 9^7 _____

The value of a power is found by multiplying them out. If there are more than two products, multiply two at a time until reaching the end, as follows:

2 x 2 x 2 x 2 x 2

4 8 16 32

In other words, $\underline{2} \times \underline{2} = 4$, $4 \times \underline{2} = 8$, $8 \times \underline{2} = 16$, $16 \times \underline{2} = 32$ *So that all five 2's have been multiplied.*

One special rule is that anything (except for 0 itself) to the "0" power is equal to one. For instance, the number 7^0 is equal to "1" just as 5^0 is equal to "1".

Find the values of the following.

9. 2^6 _____
10. 9^0 _____
11. 3^4 _____
12. 7^2 _____

Roots

Roots are the opposites of powers. In order to find the root of a number, 25 for instance, the question to ask becomes "what number times ITSELF is equal to 25? The answer is that 5 times itself (5) equals 25. In other words, the square root (written $\sqrt{\ }$) of 25 is 5. Similarly, while 3^2 means 3 x 3, or 9, the square root of 9 = 3, written $\sqrt{9} = 3$. They are opposites of one another. Any number on the outside of the square root symbol will be multiplied by the square root you solved for.

Find the roots of the following.

1. $\sqrt{81}$
2. $2\sqrt{36}$
3. $4\sqrt{4}$
4. $\sqrt{16}$
5. $\sqrt[3]{1}$
6. $\sqrt{49}$
7. $\sqrt{25}$
8. $3\sqrt{16}$
9. $\sqrt{1}$

Every positive number has 2 square roots--a positive and a negative one since, as learned in "multiplying signed numbers," two negatives make a positive. For instance, both 3 x 3 AND -3 x -3 equal 9. Therefore, the square root of 9 equals positive 3 AND negative 3.

Write both the positive and negative roots of the following.

10. $\sqrt{1}$ _____ _____
11. $\sqrt{64}$ _____ _____
12. $\sqrt{36}$ _____ _____
13. $\sqrt{16}$ _____ _____
14. $\sqrt{81}$ _____ _____
15. $\sqrt{25}$ _____ _____
16. $\sqrt{100}$ _____
17. $\sqrt{4}$ _____

Answer Guide

Forms of Fractions

1	P
2	I
3	M
4	I
5	P
6	M
7	P
8	I
9	I

Reducing Fractions

1	1/2
2	1/3
3	1/2
4	1/4
5	1/8
6	1/2
7	3/5
8	1
9	1/9

Changing a Mixed to Improper

1	13/4
2	65/9
3	17/6

Changing an improper to mixed

1	2	1/3
2	1	3/10
3	4	1/2
4	2	4/5
5	1	1/2
6	3	1/2

Multiplying & Dividing Fractions

1	1/20
2	1/18
3	1/10
4	7/96
1	2/15
2	1 1/10
3	1/2
4	7 2/3

Dividing Fractions

1	2
2	2 4/5
3	1 3/5
4	1/15

Adding and Subtracting Like Fractions

1	3/5
2	1 1/6
3	4/7
4	7 2/7
5	1
6	3 1/4

Adding and Subtracting unlike fractions

1	3 5/8
2	2/3
3	1/2

Fractions Review

1	3 1/2
2	2 2/5
3	1 1/3
4	2 1/7
5	17/3
6	16/5
7	4/1
8	2 1/2
9	1/4
10	1/3
11	1 6/7
12	3/4
13	1/4
14	1 1/7
15	7/9
16	3/7
17	1 1/4
18	4 5/8
19	5 1/6
20	3 1/6
21	1 17/18

Adding and Subtacting Decimals

1	134.198
2	524.63
3	40.793
4	5.503

Multiplying Decimals

1	.036
2	7.8
3	43.86
4	.00016
5	.0446
6	.054
7	.0721
8	189.42

Dividing Decimals

1	0.43
2	13
3	30
4	0.07
5	0.013
6	1.05
7	10.72
8	.093
9	.507

Decimal Review

1	20000
2	0.4
3	6.25
4	0.2
5	3
6	7.8
7	37.06
8	.00021
9	52.2
10	0.605
11	0.05
12	30

Percents

1	40
2	25.6

Percents

1	20
2	25
3	26
4	16
5	200
6	500
7	64
8	115
9	256
10	402
11	200
12	120
13	14
14	64
15	80
16	4
17	30
18	112

Signed Numbers

1	-6 + 4 =
2	8 - 9 =
3	-7 - 3 =
4	-2 + 5 =
5	>
6	<
7	<
8	<
9	<
10	>
11	<
12	>

Signed Numbers

1	4
2	-3
3	-3
4	+7
5	+3
6	-3
7	+1
8	-7
9	-6
10	+24
11	-40
12	-48
13	-66
14	56
15	27
16	+5
17	+7
18	-9
19	-4
20	-4
21	+2

Order of Operations

1	48
2	106
3	50
4	14
5	7
6	15
7	14
8	19
9	48
10	31
11	2
12	69

Powers

1	4^6
2	2^7
3	7^3
4	8^5
5	5x5x5x5
6	6x6
7	3x3x3x3x3
8	9x9x9x9x9x9x9
9	64
10	1
11	81
12	49

Square Roots

1	9
2	12
3	8
4	4
5	1
6	7
7	5
8	12
9	1
10	1, -1
11	8, -8
12	6, -6
13	4. -4
14	9, -9
15	5, -5
16	10, -10
17	2, -2