

Basic Facts

Guidelines

Introduction

Basic facts are to Mathematics what chords are to the playing of a guitar. If you do not learn chords, you cannot play music on a guitar, Similarly, if you do not know your basic addition, subtraction, multiplication and division facts, you cannot perform mathematical operations.

Historically, young New Zealanders had to learn their “times tables” by their fourth year of school as these were essential to work with pre-decimal currency. 12 pennies made up a shilling (worth approximately 10 cents), so in order to convert pennies to shillings, knowledge of tables up to 12 x12 was required.

However, with the change to decimals, the introduction of calculators and highly questionable changes in educational philosophy, the requirement to learn these has almost disappeared, to the point where the **majority** of students entering secondary school **do not actually know them**.

We cannot stress enough, however, how important it is that they are learnt if students are ever going to be able to perform basic everyday functions without depending upon a calculator.

The attached test is designed to check a student’s mastery of their multiplication basic facts (“times tables”) up to and including 12 x 12.

Mastery of basic facts means the ability to **instantly recall the correct answer without having to take time to perform any calculation**. In order to test this ability, the test must be administered accurately according to the following instructions. (Note that the questions have been randomized so a student is not able to use a particular pattern while answering the questions.... reliance on such a method is itself evidence that mastery has not yet been achieved.)

Materials needed

You will need the following:

- (1) A quiet place where you can sit with your student and not be interrupted.

Name _____		BASIC FACTS DIAGNOSTIC TEST				Date _____	
2x0=0	7x0=0	12x1=12	8x1=8				
2x1=2	2x6=12	2x12=24	4x12=48				
2x10=20	6x10=60	5x1=5	7x10=70				
6x10=60	6x11=66	6x9=54	6x8=48				
6x10=60	7x10=70	3x0=0	6x1=6				
7x10=70	2x0=0	2x0=0	4x0=0				
12x12=144	12x12=144	7x4=28	8x4=32				
11x12=132	6x10=60	12x11=132	12x11=132				
11x11=121	2x6=12	6x0=0	6x0=0				
7x0=0	2x0=0	6x0=0	6x0=0				
2x1=2	2x1=2	6x7=42	6x7=42				
6x0=0	6x10=60	3x12=36	3x12=36				
2x0=0	12x10=120	6x12=72	6x12=72				
12x12=144	6x12=72	6x1=6	6x1=6				
7x12=84	6x12=72	7x1=7	7x1=7				
7x12=84	2x0=0	2x1=2	2x1=2				
6x10=60	6x12=72	7x7=49	7x7=49				
2x1=2	2x1=2	6x12=72	6x12=72				
7x11=77	6x0=0	3x1=3	3x1=3				
2x0=0	12x0=0	2x0=0	2x0=0				
6x0=0	6x10=60	6x0=0	6x0=0				
2x12=24	6x11=66	6x0=0	6x0=0				
2x7=14	2x0=0	2x0=0	2x0=0				

Number correct = 12 x 100 = _____%

- (2) A clock or a watch with an easily visible second hand in front of you.
- (3) The attached test sheet (with something behind so you can write on it) and a pen.

Instructions

The test is administered orally.

- (1) Read the first basic fact out loud to your student, and then repeat it. ("Two times zero. Two times zero.")
- (2) Allow them **three seconds** to answer orally, then read out the second in the same way. ("Two times six. Two times six.")
- (3) Again, allow them **three seconds** before continuing with the next basic fact.
- (4) Do not let them interrupt you in any way to ask for more time... just continue on regardless (as though you were a tape recording). The reason for this is that they either know them or they don't... if they need time to think about them and calculate them, then they do not know them well enough.
- (5) Mark in the boxes the ones which they do not know. The failed ones become your student's learning list.

How to learn basic facts

- (1) From the results of the diagnostic test, make up small memory cards of the unknown ones, with the question on one side and the answer on the back. (The cards can subsequently be used to play the traditional Memory game.)
- (2) Consider establishing some form of reward system for each card that is subsequently mastered.
- (3) Research has shown that if the brain is loaded with a complex spatial or physical



task and then is simultaneously asked to perform a learning task, that the learning department of the brain has to go into overdrive to accommodate all of the extra input. It is believed that this extra "strain-on-the-brain" (not at all harmful in any way) actually aids the learning process. The example researchers gave was to try and balance on a plank on top of a log of wood or similar while simultaneously repeating a basic fact (such as "seven eights are 56").

Following on from this research, we suggest the following.

- a. Take just **one** unknown basic fact a day. (Do not try and do more..... one a day is achievable, whereas the statement “learn your six times tables” is not so realistic.
- b. Organize a small, outdoor fitness routine for the child to do each day, that is made up of a number of separate, spatial tasks. e.g.
 - i. Jumping on a trampoline
 - ii. Skipping
 - iii. Bouncing a ball, basketball style
 - iv. Kicking, running and catching a ball
 - v. Hitting a ball with a racquet repeatedly against a wall
 - vi. Shooting a number of basketball hoops
 - vii. Any balancing activity
 - viii. Bouncing a ball up and down on a racquet or bat
- c. While running through this routine each day, the child repeats over and over to themselves the basic fact they are trying to learn.

(4) At regular periods, retest your student to ensure progress is being made.

* * * *

Name: _____

BASIC FACTS DIAGNOSTIC TEST

Date: _____

$2 \times 0 = 0$	
$2 \times 6 = 12$	
$2 \times 10 = 20$	
$4 \times 5 = 20$	
$4 \times 8 = 32$	
$7 \times 12 = 84$	
$0 \times 6 = 6$	
$11 \times 12 = 132$	
$11 \times 11 = 121$	
$7 \times 8 = 56$	
$2 \times 7 = 14$	
$4 \times 4 = 16$	
$2 \times 9 = 18$	
$10 \times 12 = 120$	
$9 \times 12 = 108$	
$3 \times 4 = 12$	
$3 \times 5 = 15$	
$2 \times 2 = 4$	
$7 \times 11 = 77$	
$2 \times 8 = 16$	
$9 \times 9 = 81$	
$2 \times 12 = 24$	
$5 \times 7 = 35$	

$7 \times 9 = 63$	
$3 \times 6 = 18$	
$8 \times 10 = 80$	
$8 \times 11 = 88$	
$7 \times 10 = 70$	
$3 \times 8 = 24$	
$12 \times 12 = 144$	
$6 \times 10 = 60$	
$2 \times 3 = 6$	
$5 \times 9 = 45$	
$3 \times 7 = 21$	
$9 \times 10 = 90$	
$10 \times 10 = 100$	
$8 \times 12 = 96$	
$6 \times 12 = 72$	
$3 \times 9 = 27$	
$4 \times 7 = 28$	
$2 \times 5 = 10$	
$8 \times 9 = 72$	
$12 \times 0 = 0$	
$9 \times 11 = 99$	
$6 \times 11 = 66$	
$5 \times 8 = 40$	

$10 \times 1 = 10$	
$5 \times 12 = 60$	
$5 \times 11 = 55$	
$6 \times 9 = 54$	
$3 \times 0 = 0$	
$5 \times 5 = 25$	
$2 \times 4 = 8$	
$10 \times 11 = 110$	
$5 \times 6 = 30$	
$4 \times 0 = 0$	
$6 \times 7 = 42$	
$3 \times 12 = 36$	
$5 \times 10 = 50$	
$4 \times 11 = 44$	
$7 \times 1 = 7$	
$2 \times 11 = 22$	
$7 \times 7 = 49$	
$4 \times 12 = 48$	
$3 \times 11 = 33$	
$3 \times 3 = 9$	
$6 \times 6 = 36$	
$4 \times 6 = 24$	
$0 \times 5 = 5$	

$8 \times 1 = 8$	
$4 \times 10 = 40$	
$3 \times 10 = 30$	
$6 \times 8 = 48$	
$9 \times 1 = 9$	
$4 \times 9 = 36$	
$8 \times 8 = 64$	
$11 \times 1 = 11$	

(Number correct \div 77) \times 100 = _____ %