Third Grade Evaluation Guidebook

"Raising a fire safe generation of children"

Commonwealth of Massachusetts
Department of Fire Services
Division of Fire Safety
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Contents

Section One: Introduction

Purpose: This guide describes the evaluation designed for the third grade Student Awareness of Fire Education Program.

Evaluations have two critical components. First, we have to be clear and accurate about what we want to achieve and can measure – we may not be able to measure everything we want to achieve. Second, we need a tool (or tools) that can accurately measure whether and to what extent we have achieved what we aim for. Many fire and life safety educators have developed ways to test whether children have learned what was taught in the classroom. Some ask children in the classroom to report back what they have learned. Some construct home escape courses for children to complete. These approaches give individual educators good feedback about their teaching. But few individual efforts use tools which are relatively easy to administer in the classroom, and comprehensively measure major subjects of teaching. The S.A.F.E. program third grade evaluation is designed to do both. The S.A.F.E. evaluation consists of a pencil and paper test of 30 items, using the MCAS format of choosing among four answers. The test takes 15-minutes, and covers critical concepts taught through third grade. Test answers are entered into an Excel database which automatically calculates overall scores and averages. The evaluation is intended to assist educators and the S.A.F.E Program in:

1. Planning and improving teaching
2. Reporting effectiveness
3. Setting program goals, and
4. Obtaining funding

This guide describes how:

- this test was developed,
- to administer the test to students,
- to record and information from the test, and
- test results can be used to plan teaching, prepare reports and document effectiveness.

How the Test Was Developed: The test was developed by the Department of Fire Services, working with the Massachusetts Fire and Life Safety Educators Task Force. It draws on the Massachusetts *Curriculum Planning Guidebook*, Department of Education Health and Safety Curriculum Frameworks, other curricula and reports concerning education and safety for children. All stages of development were reviewed by the task force and professional educators. The final stage of development was a series of six pilot tests with students in third grade classes.

Section Two: What is Tested

Based on task force recommendations and review of curricula and reports, ten concepts were identified for testing at the third grade level. The test contains stories based on these concepts. Children pictured in the stories are faced with a fire danger, and must choose the correct action. Students taking the test are asked what the children should do (from a choice of four items). Additional questions test students' knowledge about subjects of the stories.

Below are the ten concepts on which the test is based. Concepts are defined by 'understanding', i.e. knowledge, and 'behaviors', i.e. actions. The questions which test each concept are also listed. Refer to the test booklet to see the full questions.

1. Understands and practices match and lighter safety: test questions 4, 5 and 6
    - Understanding:
        - matches and lighters burn
        - matches and lighters are tools for grown-ups
        - matches and lighters are not toys
        - children tell grown-ups if they see matches or lighters
    - Behaviors
        - Does not touch matches or lighters
        - Refuses to play with matches or lighters
        - Tells grown-ups if matches or lighters are out in the open
        - Tells grown-ups if a child sees friends or other children playing with matches or lighters

2. Understands and practices stop-drop-and-roll: test questions 20 and 21
    - Understanding:
        - Stop-drop-and-roll is a way to put out the fire
        - For when fire gets on clothes
        - Important to act immediately
        - Stop-drop-and-roll is very different from crawl-low-under-smoke
    - Behaviors: Correct sequence is critical
        - Stop immediately
        - Drop to ground
        - Cover eyes and mouth
        - Roll over and over until flames are out

3. Understands and practices escape plans: test questions 7, 8, 22, 23 and 24
    - Understanding:
        - Most fires happen at home
        - Fires can grow quickly
        - Each room should have two ways out
        - Knows two ways out of each room
        - Escape exits should have no obstacles (home safety inspection item)
        - Everyone should know the plan
        - Working smoke detectors are necessary
        - Smoke detectors should be on every level and just outside sleeping areas
        - Practicing the plan is important – have drills twice a year
    - Behaviors:
        - Identifies where smoke detectors should be
        - Identifies doors and windows in the home
        - Identifies two escape routes/ways out from each room

- Identifies if obstacles block exits (home safety inspection item)
- Choose an outside meeting place
- Have a drill

4. Understands smoke alarms and responding to smoke alarms: test questions 7, 15, 16, 17, 18 and 30

- Understanding:
  - Smoke alarms can 'smell' smoke
  - Smoke alarms make a loud noise when smoke is detected
  - The loud noise is a signal to stop what you are doing and get out of the building
  - Some smoke alarms need batteries
  - Smoke alarms make a chirping sound when batteries are wearing out
  - Smoke alarms should be tested every month to make sure they are working
  - Some smoke alarm batteries need to be replaced twice a year
- Behaviors:
  - Helps a grown up test a smoke alarm
  - Helps a grown up replace smoke alarm batteries twice a year
  - Identifies sound made when smoke alarm goes off
  - Identifies chirping sound made when batteries need to be replaced
  - When the smoke alarm sounds: stops what he/she is doing and follows escape plan

5. Understands and practices crawl-low-under-smoke: test questions 8 and 9

- Understanding:
  - Smoke is dangerous/poisonous
  - Smoke is hot and dark
  - ~~e~~ Smoke rises toward the ceiling
  - Cooler, cleaner air is between 1 and 2 feet from the floor
  - Crawl-low-under-smoke is very different from stop-drop-and-roll
- Behaviors:
  - Can identify exit/escape
  - Crawls on hands and knees
  - Crawls toward exit/escape

6. Identifies exit signs and knows two ways out of public places: test questions 25 and 26

- Understanding:
  - Recognizes letters that spell 'Exit'
  - 'Exit' signs show where you can get out of a building in an emergency
  - Public buildings have emergency exits
  - Knowing where exits are is important even if there is no emergency
- Behaviors:
  - Looks for exit signs in public buildings
  - Looks for at least two marked exits
  - Uses the exit that is away from the smoke

7. Understands and can report fires and other emergencies: test questions 12, 13 and 14

- Understanding:
  - Important to get away from the fire first
  - Firefighters, police and EMT's are community helpers
  - Community helpers will come to help when they are called
  - 911 is the number to call for firefighters, police or EMT's

    - Important to: give your name, where the fire is and stay on the line until the dispatcher says it is okay to hang up
- Behaviors:
    - Gets away from the fire using escape skills
    - Dials 911
    - Gives own name and address
    - Tells what the emergency is
    - Tells where fire or emergency is
    - Stays on phone until dispatcher says it is okay to hang up
    - Stays away from the fire

8. Understands tobacco and smoking materials are dangerous in three ways: test questions 1, 2 and 3

- Understands:
    - Cigarettes, cigars and pipes are all smoking materials made from tobacco
    - Tobacco is poison
    - Cigarettes, cigars and pipes can cause fires
    - Smoke from cigarettes, cigars and pipes is unhealthy for everyone
    - People who smoke should use heavy ashtrays to put out cigarettes and cigars and to empty pipes
    - People who smoke should go outside
- Behaviors:
    - Identifies smoking materials as tobacco
    - Describes tobacco as a poison
    - Describes how cigarettes, cigars and pipes can cause fires
    - Describes how smoke is unhealthy

9. Understands firefighters are helpers who save lives: test question 11

- Understands:
    - Firefighters know what to do if there is a fire
    - Firefighters know what to do if someone is hurt, or sick
    - Firefighters have special equipment and clothing
    - Children should not hide or run from firefighters
    - Firefighters live nearby and are neighbors
- Behaviors:
    - Recognizes firefighter
    - Recognizes firefighter equipment
    - Does not hide from firefighter

10. Understands first aid for burns: test questions 19, 27, 28 and 29

- Understands:
    - Stoves, barbecue grills, irons, toasters, matches, lighters, hot water are hot
    - Hot things cause burns
    - Children should stay away from hot things
    - Burns need to be cooled fast with cold water for 10-15 minutes
    - Grownups need to know if a child is burned so the grown up can help
    - A doctor or nurse should treat a burn that is blistered or charred,
- Behaviors:
    - Identifies hot things
    - Identifies hot things children should not touch
    - Describes how to turn on cold water first in a bath or sink
    - Describes how to cool a burn
    - Tells a grown up about a burn

Section Three: Administering the Test

This section describes how to use the test in the classroom.

1. Strategies and Considerations: Before launching the evaluation, you should think about how to set up a system that you can manage and maintain. That means a system which allows you to administer the test on a regular schedule; process the data efficiently; and produce reports.

S.A.F.E. educators have found the following to help:

(a) Target Specific Schools: It is not necessary to administer the test to every student in every third grade, every year. But it is necessary to use be sure that the evaluation is conducted in a similar manner each time, so that results can be compared. S.A.F.E. educators have used the following strategies to establish manageable systems:

- Target schools in districts with high injury and/or fire rates. These are the schools where you would want to see improved understanding – and reduced injury and fire rates – over time.
- Target new schools, or schools which are new to the S.A.F.E. program.
- Target schools you 'grew up with'.
- Rotate schools: test half (or one-third) of schools each year.

(b) Engage the School System: When you work with schools in developing your S.A.F.E. program, ask school administrators to manage administering the test. This way, the teacher can choose a time that fits in with academic needs. Be sure to emphasize the importance of timing: the test should be administered toward the end of the 3rd grade, or right at the beginning of 4th grade. Provide clear instructions as to administration of the test (see below).

You might also work with schools to include the S.A.F.E. evaluation in a rotation of other health and behavior risk surveys.

(c) Select a Sample: Choose a representative sampling of schools. This means schools where students' socio-economic characteristics are similar to those of all students in the system. Sample size calculators are available on the web (search for '*sample size'* or '*sample size calculator'*). Use these calculators as guides, not absolutes, since we cannot assess their reliability. Be sure to use the same method each time.

(d) Use Your Knowledge of the Community: The cities, towns and neighborhoods where you teach are varied. You already accommodate differences such as common housing structures, socioeconomic status and languages in your teaching. Keep these differences in mind in administering the test.

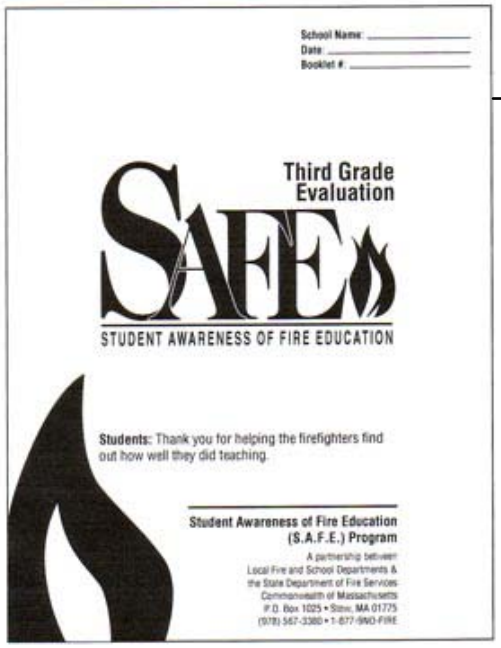
2. Timing of Test Administration: Plan to administer the test to third grade students at the end of the school year. In most years, third grade MCAS testing is complete by the end of May, and S.A.F.E. testing should be scheduled after MCAS is finished for the year. If you are not able to schedule the test in May or June, plan to do so at the beginning of 4th grade no later than September.

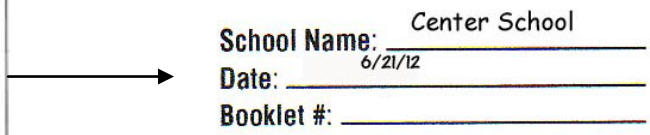
3. Preparation:

(a) Schedule classroom time: Consult with the school, and classroom teacher, explaining that while the test time is limited to 15 minutes, you will need additional time to explain the test, and to distribute and collect the test.

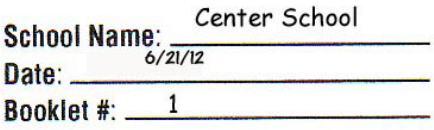
(b) Prepare test booklets: Each test booklet should be numbered, and labeled with the name of the school and date of test. The cover of the booklet contains space to record this information.

- Before making copies of the booklet for the scheduled test, record the name of the school and date of test.





- After making copies, number each booklet:



4. <u>In the Classroom</u>:

(a) Coordinate with the Teacher: Check ahead with the teacher to find out what the teacher wants students to do when they finish (assuming some students will finish ahead of others). Include this in your instructions (see section b). Ask if the teacher would be willing to help in distributing and collecting test booklets. Usually teachers are happy to do this and want to monitor their classroom.

(b) Instruct the Students:

(1) Preparing Students: Ask students to look at you. Using your own words, give the following instructions:

- Make sure desks are clear
- Take out a pencil
- When students are ready they should look at you.

(2) Explaining the Test: Using your own words, make the following points:

- You (or other educators) have come to their classroom to help students learn about fire safety. Now we want to be sure that students have learned what they need to know. The Department of Fire Services has created a book of stories and pictures about children, and the things they need to know, or the things that they need to do in order to be safe from fire. (Hold up the booklet for students to see while you are saying this.)
- The booklet has questions for them to answer. Each question has four choices of answers. Students choose the correct answer, and put a circle around the letter next to the answer.
- This is a test of the teaching and not a test of each student. Students do not put their names on the test, and the test will not be graded.
- Once they start, they will have 15 minutes to complete the test. It may be difficult to finish every question in that time, but students should do their best.
- If a student does not know the answer to a question, the student should skip that question and go to the next question. If there is time the student can come back to the question later.
- You (and the teacher, if willing) will hand out the test. Students should not start until you tell them to.
- Give them the instruction the teacher has provided as to what they should do when they finish (e.g. take out a book and read).

(c) Distribute the test. When all students have a test, ask them to look at you. Tell the students you will read the first page.

(d) Start the Test and Track the Time: Read the first page. Remind students when choosing the correct answer, they circle only the letter next to the correct answer. Then tell students they can start. Make a note of the time. When 10 minutes have passed, tell students there are five

minutes left. As the 15 minute mark approaches, tell students time is nearly up and they should finish the question they are on. At 15 minutes tell students to put their pencils down and look up at you.

(e) Collect the tests.

(f) Finish: Thank students for their help. If you have prizes or favors to distribute, do this now. Thank the teacher.

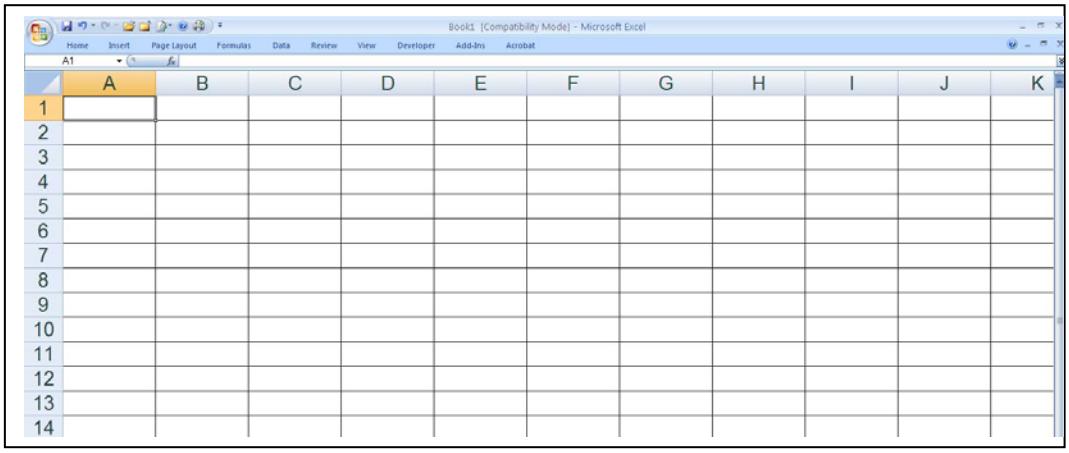
Section Four: Scoring

This revision to the S.A.F.E. 3rd Grade Evaluation Guide is based on a revised Excel database. In this database, there is no need to 'score' – simply enter the letter the student has circled in the database. The database has formulas which automatically count the number of correct and incorrect answers, and percentages of correct and incorrect answers. The database is described in the next section.

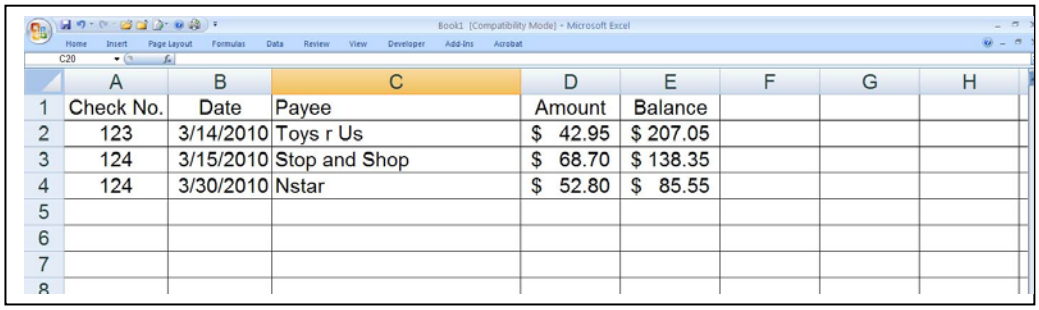
Section 5: The Database

This section describes the database you will use to record information about the test, beginning with reviewing what a database is. This is followed by descriptions of how to enter information and how the database analyzes the information by calculating scores and averages.

1. What is a database? Information about the test – school name, date, booklet number and answer scores – is entered into a database created in Excel. Excel is a Microsoft Office program which uses a 'spreadsheet' layout to record and track information, and to perform calculations. A spreadsheet has rows and columns. Here is what a spread sheet looks like:



AS AN EXAMPLE: Similar layouts can be found in checkbook registers, where each row contains information about a single check, and each column contains categories of information such as number, date, payee and amount. If a spreadsheet were used as a check register, it might look like this:



	A	B	C	D	E	F	G	H
1	Check No.	Date	Payee	Amount	Balance			
2	123	3/14/2010	Toys r Us	$ 42.95	$ 207.05			
3	124	3/15/2010	Stop and Shop	$ 68.70	$ 138.35			
4	124	3/30/2010	Nstar	$ 52.80	$ 85.55			
5								
6								
7								
8								

In the Excel file created for the S.A.F.E. Third Grade Evaluation, each row contains information about individual tests, and each column contains categories of information such as booklet number, scores for each answer and total score for the test.

'DFS-SAFE 3rd Grade Test Database MASTER' is the Excel file created for recording test scores. It is distributed with this guide. In addition to providing a place to record information about tests, the file contains embedded formulas which calculate percentage of correct answers and average scores.

Use this database for recording test scores, assessing learning, planning lessons and reporting on the education program. Here are things the data can tell you:

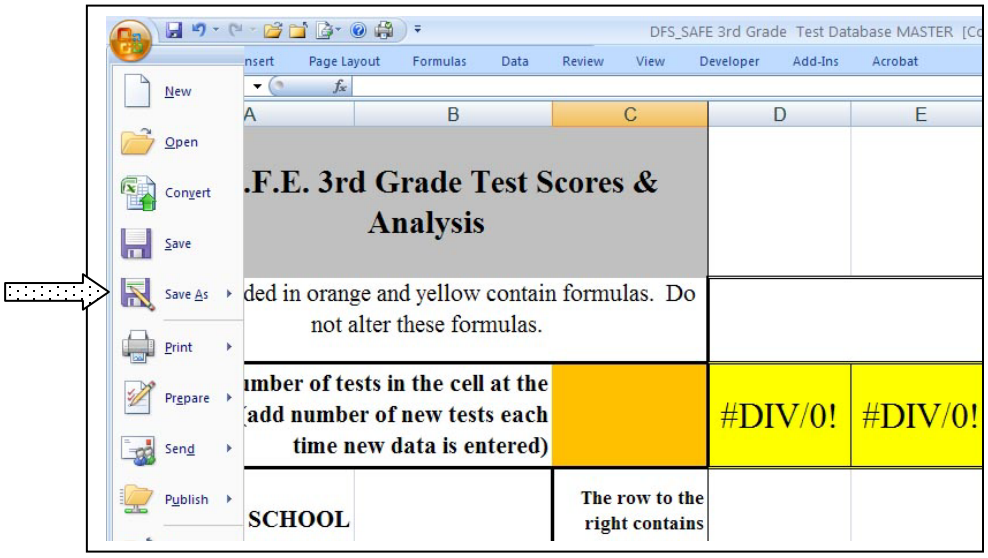
- The percent of students who answer each question correctly
- The overall percent of correct responses -- similar to a grade, but one which applies to the tests all together.
- The average percent of correct answers for all tests entered in the database.
- Learning by concept, i.e. how well students have learned specifics of concepts taught. For example, of six questions about smoke alarms, which questions did most students answer correctly, and which questions did most students answer incorrectly. This information can be used to set teaching goals, and for reporting improvements.
- Track incorrect answers in order to identify what students misunderstand. For example, if they consistently choose a 'stop-drop-cover-and-roll' illustration which omits the 'cover'.
- Track and compare scores from year to year.

Percent of correct answers and averages are calculated automatically. The cells which contain this information are locked so that they cannot be altered accidentally.

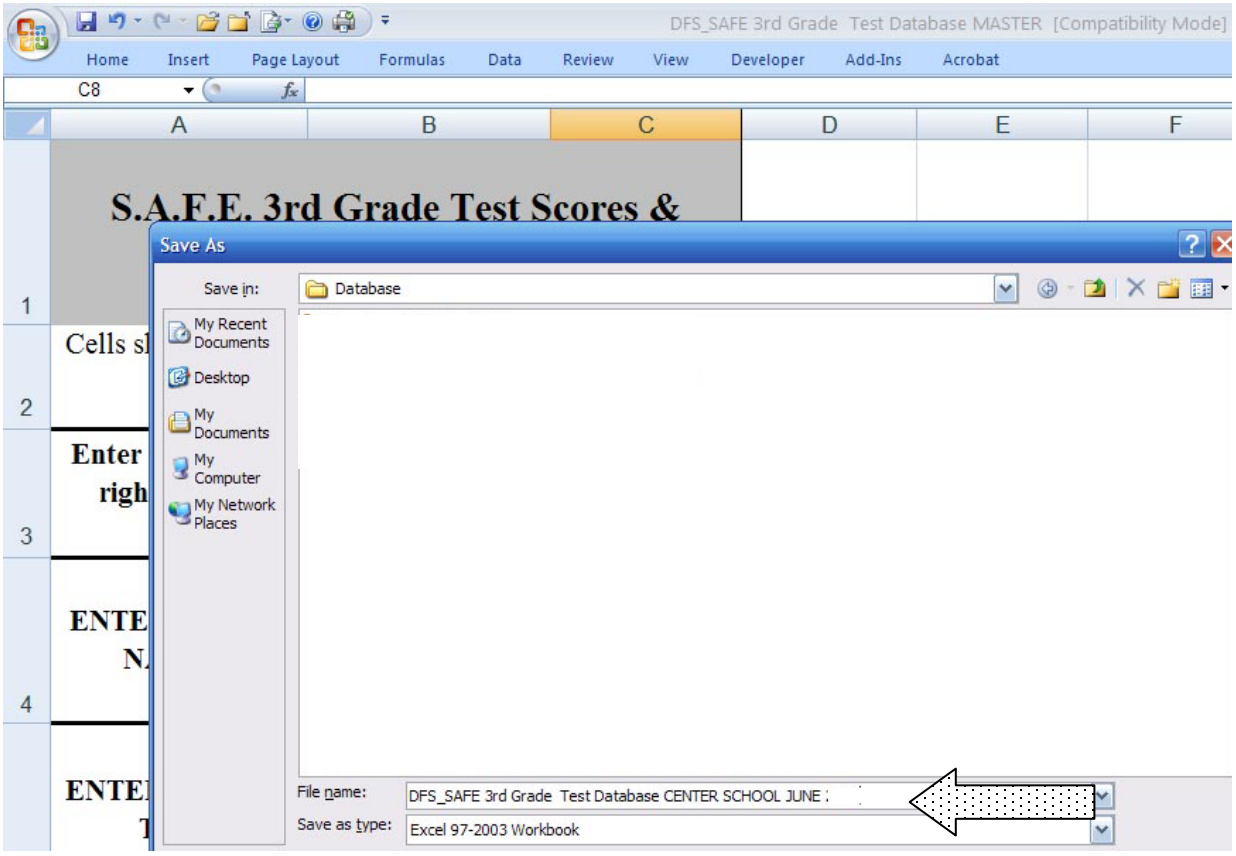
This section of the guide describes how to use the database. It would be helpful if you open the database and follow along as you read this section.

2. Setting Up Your File: DFS-SAFE 3rd Grade Test Database MASTER' is your master file. DO NOT ENTER SCORES OR DATA INTO THIS MASTER FILE. Instead, create a copy of the file for each annual test at each school. To create a copy:

1. Open DFS-SAFE 3rd Grade Test Database MASTER. Click on 'File' and select 'Save As' from the drop down menu:



2. When the ‘Save As’ dialogue box opens, delete the word ‘MASTER’ and enter the name of the school and date of the test.

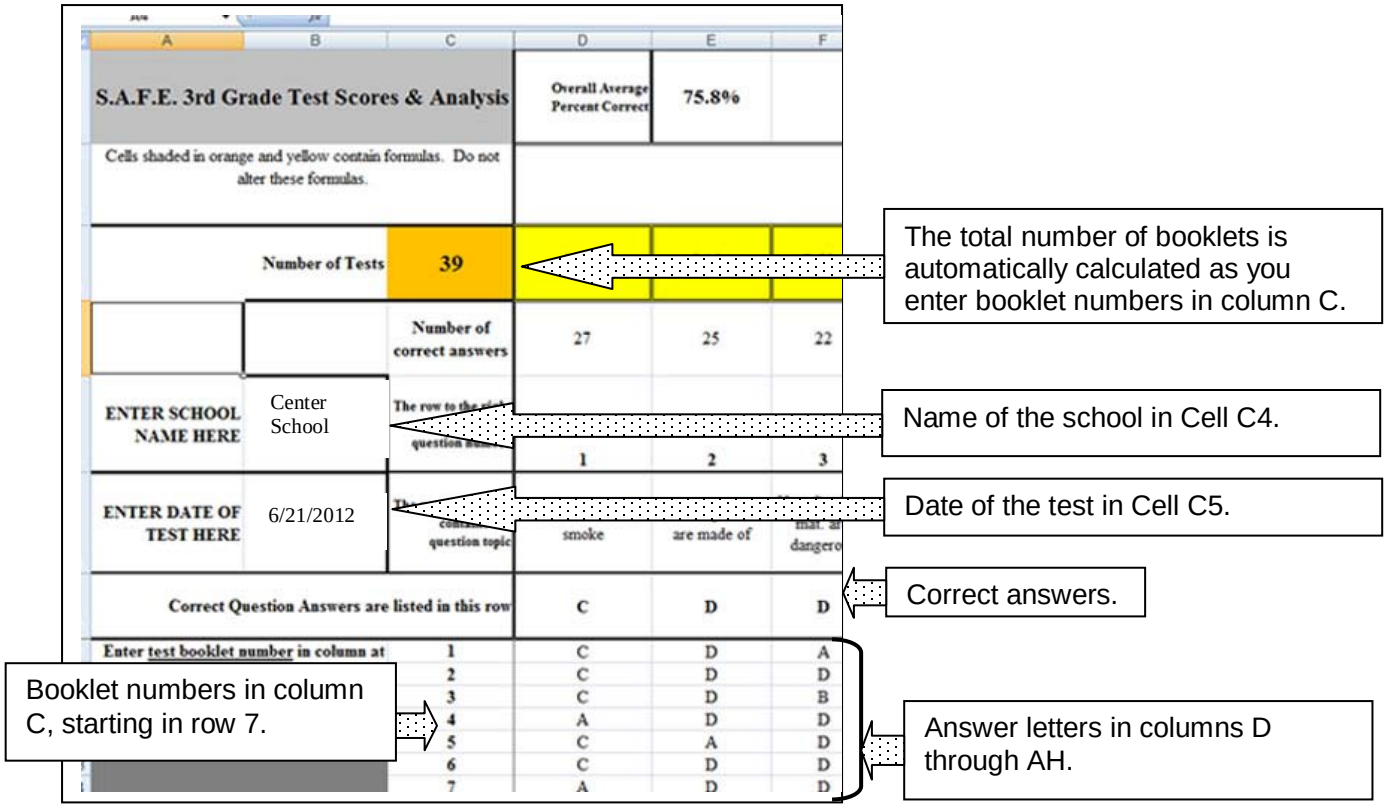


3. Using the Database: The database has three worksheets: ‘Test Answers Scores’, ‘Ques-Scores by Concept’ and ‘% Incorrect Answers by Concept’. Each worksheet contains embedded formulas. The formulas calculate percentages and averages. The cells with formulas are locked and the formulas cannot be altered.

(a) Entering Information: You will enter information only into the ‘Test Answers Scores’ worksheet, as follows:

- Enter the name of the school in Cell C4
- Enter the date of the test in Cell C5
- Enter information from each test booklet:
  - Booklet number in Column C, starting in Row 7
  - Answers in Columns D through AH. Enter the letter the student has circled, i.e. A, B, C or D.

Here is what these cells and rows look like in the database:



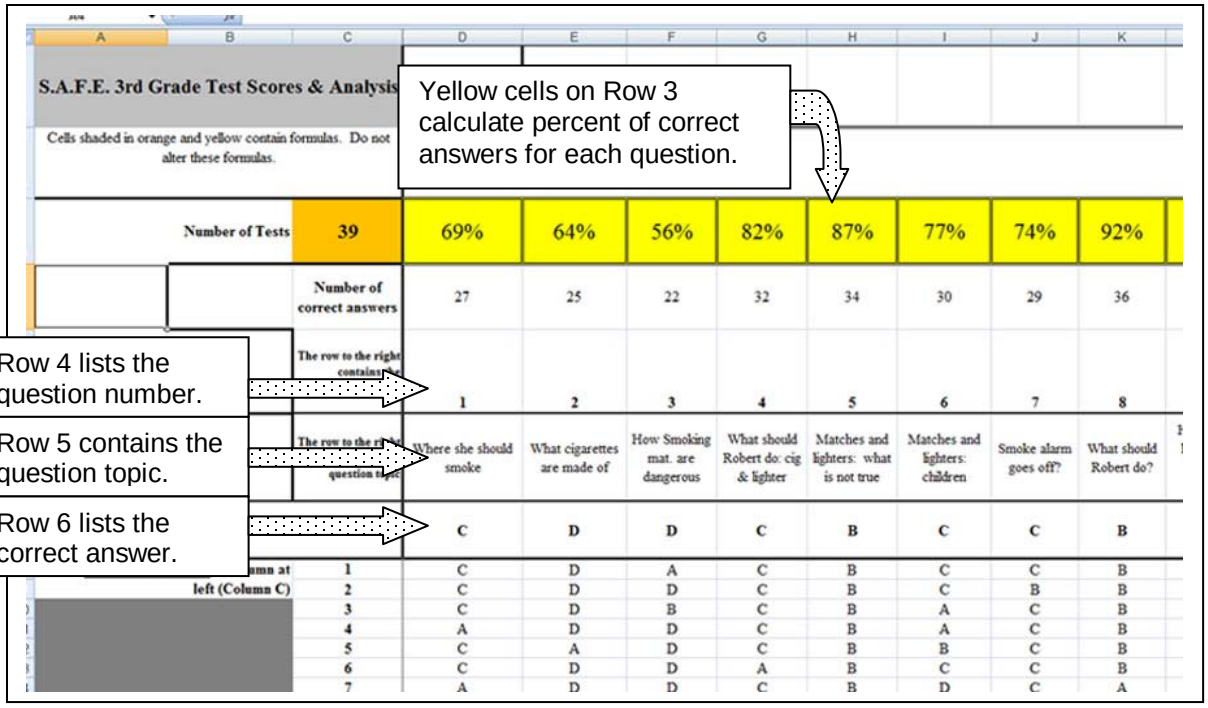
MOST IMPORTANT: After you have entered data, SAVE your file. In fact it is a good idea to save periodically during data entry.

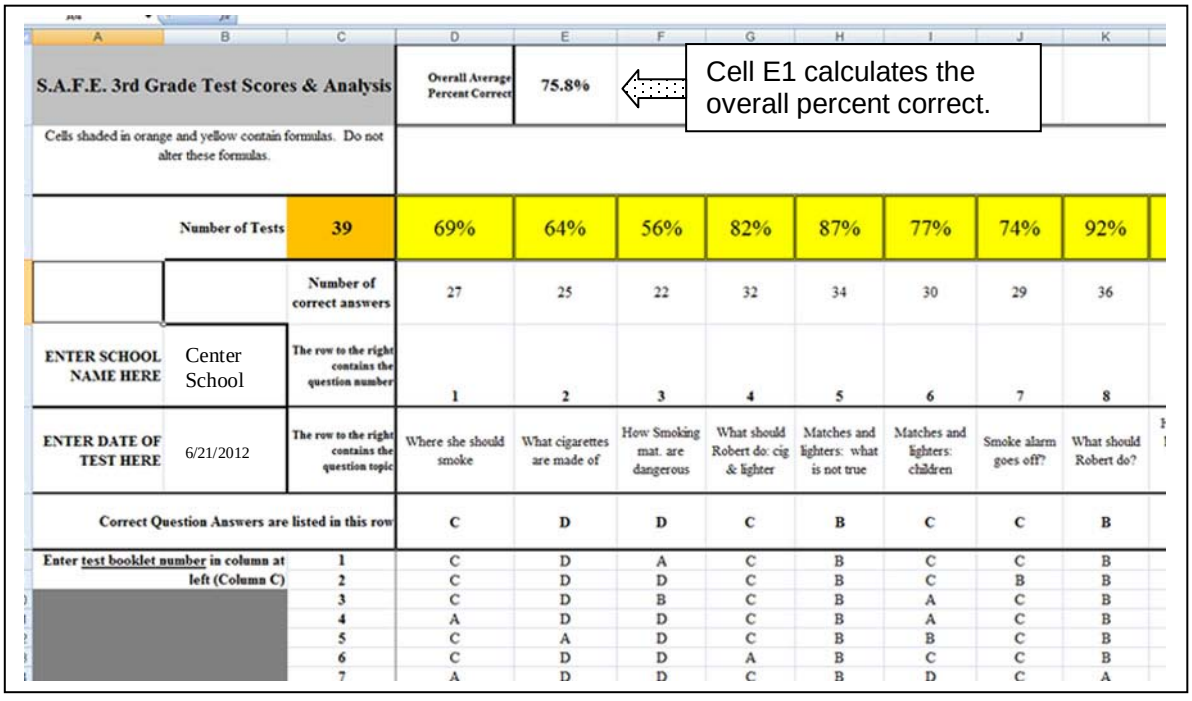
(b) Points of Reference: Test question numbers, topics and answers are contained in rows 4, 5 and 6:

- Row 4 lists the question numbers;
- Row 5 contains brief summaries of the question topics; and
- Row 6 contains the letter that is the correct answer.

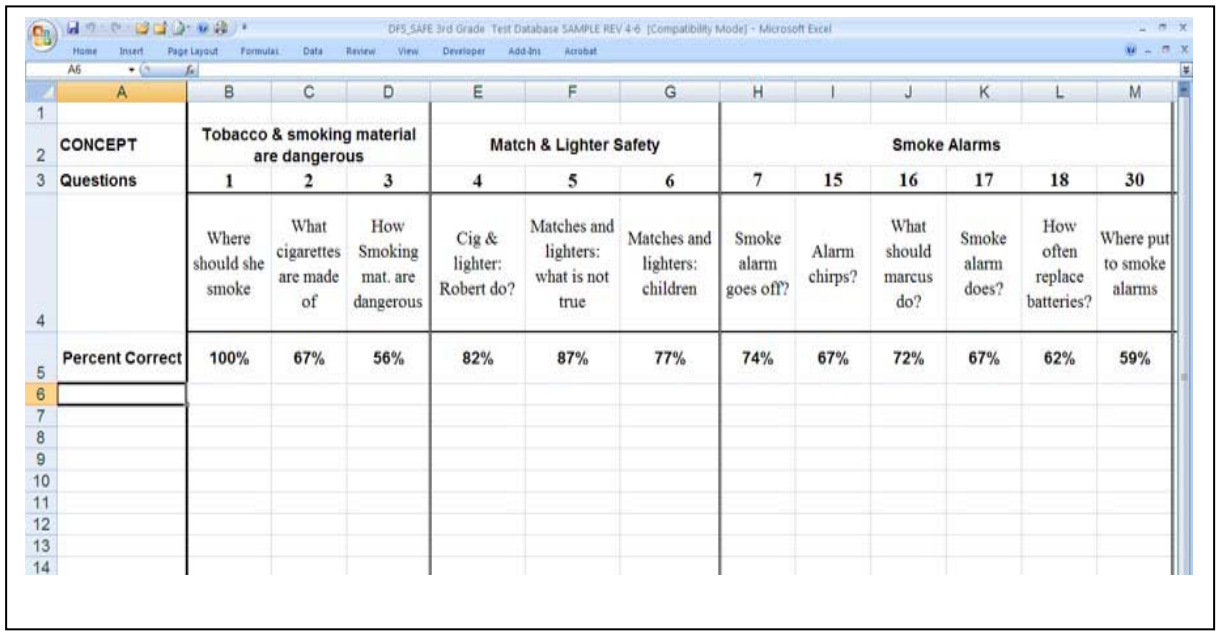
The top three rows, and three left columns are 'frozen', allowing them to display as you move across the rows and down the columns. This is intended to help keep track of where you are.

(c) Calculating scores and percentages: The database automatically calculates the percent of students who answer questions correctly for each question; the percent correct appears in Row 3. The overall average percent correct appears in cell E1.


S.A.F.E. 3rd Grade Test Scores & Analysis
Cells shaded in orange and yellow contain formulas. Do not alter these formulas.
Yellow cells on Row 3 calculate percent of correct answers for each question.
Number of Tests 39
69% 64% 56% 82% 87% 77% 74% 92%
Number of correct answers
27 25 22 32 34 30 29 36
The row to the right contains the question number
1 2 3 4 5 6 7 8
The row to the right contains the question topic
Where she should smoke
What cigarettes are made of
How Smoking mat. are dangerous
What should Robert do: cig & lighter
Matches and lighters: what is not true
Matches and lighters: children
Smoke alarm goes off?
What should Robert do?
Correct Question Answers are listed in this row
C D D C B C C B
Enter test booklet number in column at left (Column C)
1 C D A C B C C B
2 C D D C B C B B
3 C D B C B A C B
4 A D D C B A C B
5 C A D C B B C B
6 C D D A B C C B
7 A D D C B D C A
Row 4 lists the question number.
Row 5 contains the question topic.
Row 6 lists the correct answer.

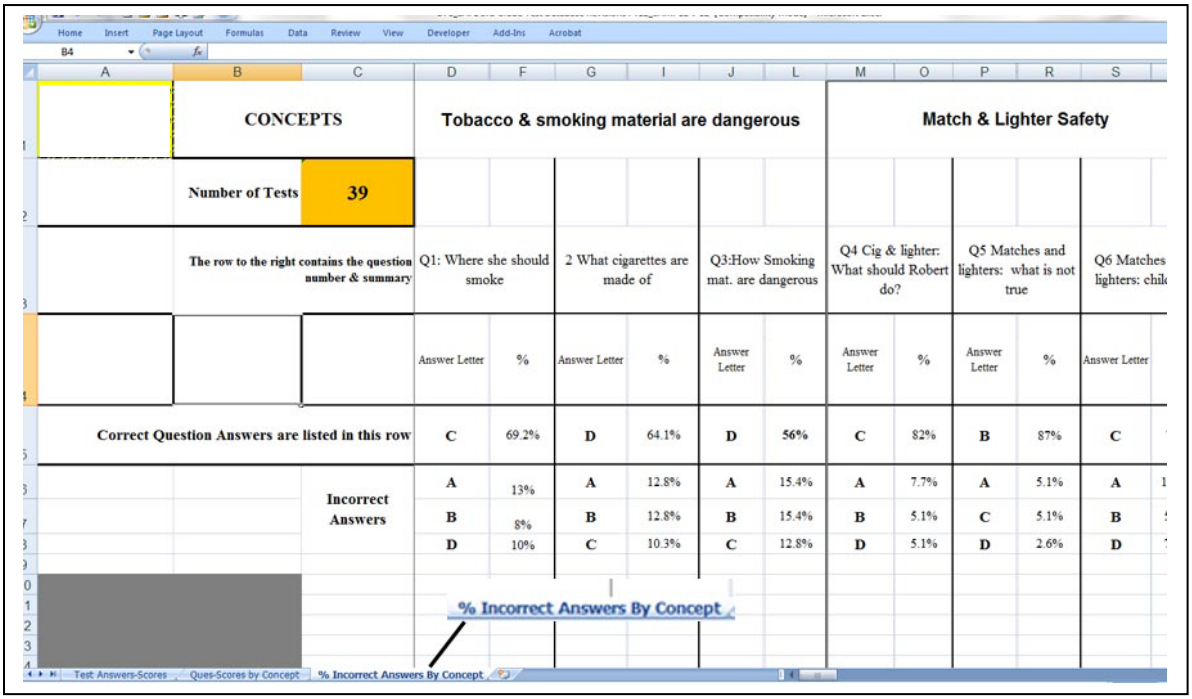

S.A.F.E. 3rd Grade Test Scores & Analysis
Cells shaded in orange and yellow contain formulas. Do not alter these formulas.
Overall Average Percent Correct
75.8%
Cell E1 calculates the overall percent correct.
Number of Tests 39
69% 64% 56% 82% 87% 77% 74% 92%
Number of correct answers
27 25 22 32 34 30 29 36
ENTER SCHOOL NAME HERE
Center School
The row to the right contains the question number
1 2 3 4 5 6 7 8
ENTER DATE OF TEST HERE
6/21/2012
The row to the right contains the question topic
Where she should smoke
What cigarettes are made of
How Smoking mat. are dangerous
What should Robert do: cig & lighter
Matches and lighters: what is not true
Matches and lighters: children
Smoke alarm goes off?
What should Robert do?
Correct Question Answers are listed in this row
C D D C B C C B
Enter test booklet number in column at left (Column C)
1 C D A C B C C B
2 C D D C B C B B
3 C D B C B A C B
4 A D D C B A C B
5 C A D C B B C B
6 C D D A B C C B
7 A D D C B D C A

3. <u>Tracking Learning by Concept:</u> The second worksheet is 'Ques-Scores by Concept'. This worksheet repeats some of the information on the 'Test-Answers Scores' worksheet, i.e. question number and summary of question topics. However, it groups this information according to concepts, so that, for example, questions about smoke alarms, which are in different places in the test booklet, are grouped together. Beneath each question and summary is the percent of students who answered the question correctly. This grouping by concept allows the educator to examine how well the specifics of concepts are being learned, and to plan changes to improve learning.



CONCEPT	Tobacco & smoking material are dangerous			Match & Lighter Safety			Smoke Alarms					
Questions	1	2	3	4	5	6	7	15	16	17	18	30
	Where should she smoke	What cigarettes are made of	How Smoking mat. are dangerous	Cig & lighter: Robert do?	Matches and lighters: what is not true	Matches and lighters: children	Smoke alarm goes off?	Alarm chirps?	What should marcus do?	Smoke alarm does?	How often replace batteries?	Where put to smoke alarms
Percent Correct	100%	67%	56%	82%	87%	77%	74%	67%	72%	67%	62%	59%

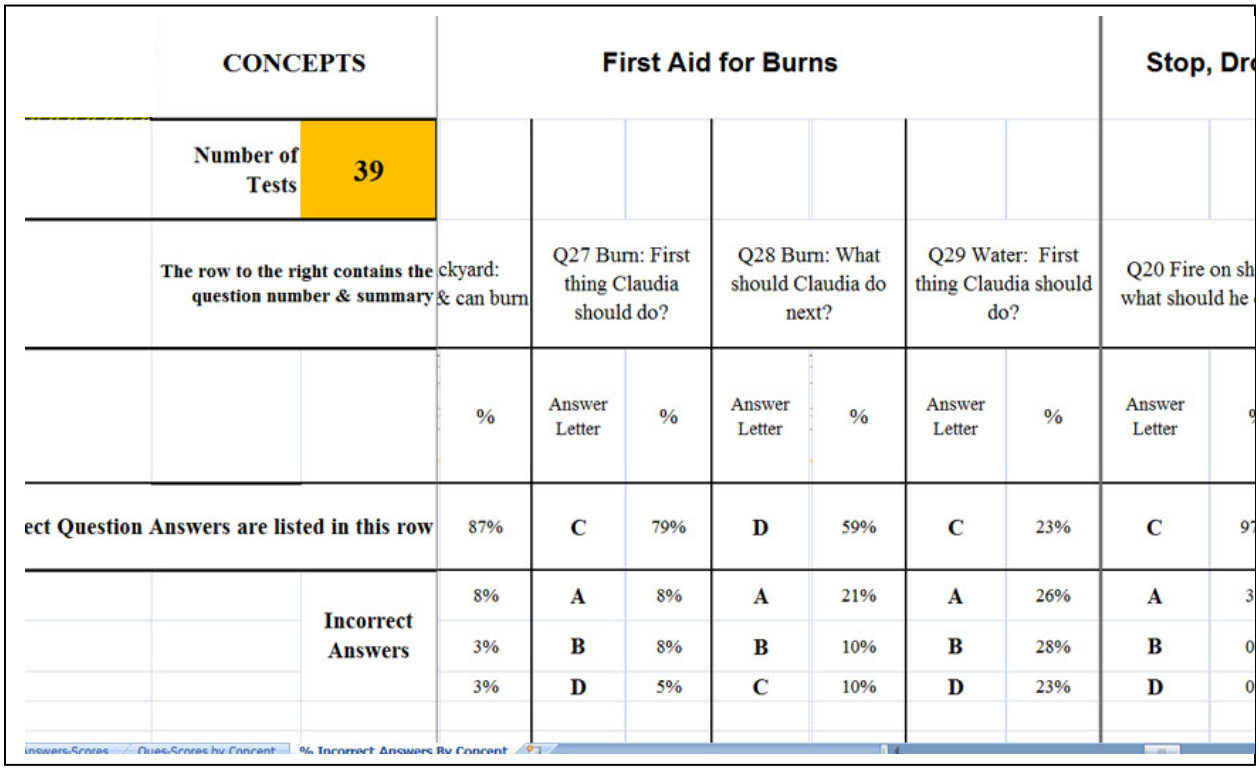
4. <u>Tracking Incorrect Answers</u>: The new database has a third worksheet, '% Incorrect Answers by Concept'. The formulas on this worksheet automatically count and calculate the number of incorrect answers entered for each question, and display the results as a percentage of the total number of tests.



CONCEPTS		Tobacco & smoking material are dangerous						Match & Lighter Safety					
Number of Tests	39												
The row to the right contains the question number & summary		Q1: Where she should smoke		2 What cigarettes are made of		Q3:How Smoking mat. are dangerous		Q4 Cig & lighter: What should Robert do?		Q5 Matches and lighters: what is not true		Q6 Matches lighters: chil	
		Answer Letter	%	Answer Letter	%	Answer Letter	%	Answer Letter	%	Answer Letter	%	Answer Letter	
Correct Question Answers are listed in this row		C	69.2%	D	64.1%	D	56%	C	82%	B	87%	C	
Incorrect Answers		A	13%	A	12.8%	A	15.4%	A	7.7%	A	5.1%	A	
		B	8%	B	12.8%	B	15.4%	B	5.1%	C	5.1%	B	
		D	10%	C	10.3%	C	12.8%	D	5.1%	D	2.6%	D	

This feature supports educators in revising or targeting their teaching, by providing information on how children misunderstand safety practices.

Here's an example: In response to question 28 (what Claudia should do next for her burn, after running cold water on the burn), where the correct answer is D, more than two-fifths of students did not know she should tell a grown up. One fifth thought she should go back to making toast.



CONCEPTS		First Aid for Burns						Stop, Dr	
Number of Tests	39								
The row to the right contains the question number & summary		ckyard: & can burn	Q27 Burn: First thing Claudia should do?		Q28 Burn: What should Claudia do next?		Q29 Water: First thing Claudia should do?		Q20 Fire on sh what should he
		%	Answer Letter	%	Answer Letter	%	Answer Letter	%	Answer Letter
ect Question Answers are listed in this row		87%	C	79%	D	59%	C	23%	C
Incorrect Answers		8%	A	8%	A	21%	A	26%	A
		3%	B	8%	B	10%	B	28%	B
		3%	D	5%	C	10%	D	23%	D

In response to question 29 (asking what Claudia should do first in running water to wash dishes), fewer than one out of four students know she should turn on the cold water first. The rest of the students chose one form or the other of turning hot water on first.

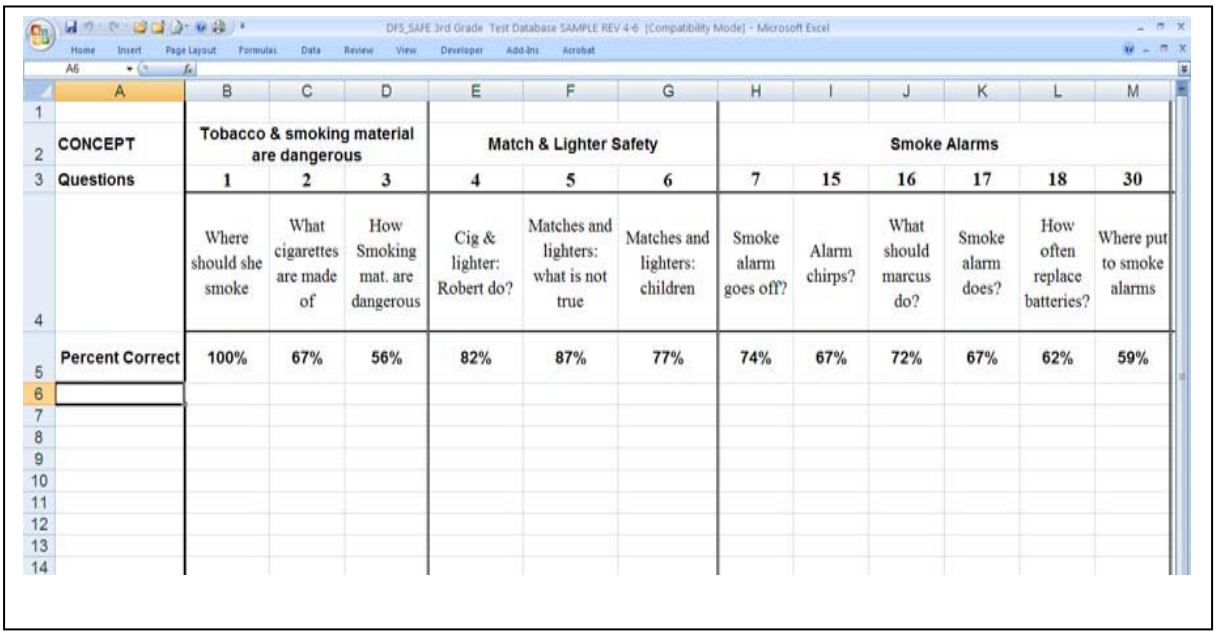
Section 6: Using Evaluation Results

1. **<u>Planning and Improving Teaching</u>**: The purpose of this evaluation is to assess whether students are learning what we intend to teach them. When an educator is in the classroom teaching, children often respond energetically and with interest. But their response may not mean they will retain learning.

Here are some examples:

(a) Information About Specific Questions:

The information in the database pictured below comes from tests of two third grade classrooms where a skilled educator had provided fire and safety lessons.



	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2	CONCEPT	Tobacco & smoking material are dangerous			Match & Lighter Safety			Smoke Alarms					
3	Questions	1	2	3	4	5	6	7	15	16	17	18	30
4		Where should she smoke	What cigarettes are made of	How Smoking mat. are dangerous	Cig & lighter: Robert do?	Matches and lighters: what is not true	Matches and lighters: children	Smoke alarm goes off?	Alarm chirps?	What should marcus do?	Smoke alarm does?	How often replace batteries?	Where put to smoke alarms
5	Percent Correct	100%	67%	56%	82%	87%	77%	74%	67%	72%	67%	62%	59%
6													
7													
8													
9													
10													
11													
12													
13													
14													

Look at the section entitled ‘Smoke Alarms’. The column referring to question 7 shows that 74% of students answered this question correctly. Question 7 (on page 4 in the test booklet) asks ‘what does it mean when the smoke alarm goes off?’ The correct answer is ‘Stop what you are doing and follow the escape plan’, and 74% (almost three-quarters) of students know what to do. This is a good result.

But the data also show that 26% of students did not answer correctly. The other choices among the answers to the question ‘what does it mean when the smoke alarm goes off?’ are:

- The batteries should be changed
- You should call 911
- The smoke alarm is broken.

Children understand it is important to know what to do when the smoke alarm goes off. However, when presented with a list of possibilities such as ‘call 911’, children may not be sure what the right

action is. This might suggest that the educator needs to reinforce the safe sequence of action: FIRST stop what you are doing and follow the escape plan; do not call 911 until after you have gone to the meeting place.

Look at the column referring to Question 15 (page 9 in the test booklet). Question 15 asks 'what does it mean when the smoke alarm chirps?'. The correct answer is 'The batteries are wearing out and should be replaced'. The other choices are:

- There is a fire and Marcus should escape
- There is a bird in the smoke alarm
- The smoke alarm is working properly

Two thirds (67%) of students answered correctly, meaning that one-third of students did not know the correct answer. The educator may need to spend more time on the differences between an alarm sound and a battery-wearing-out sound.

(b) Considering Information From Several Questions Together.

The examples above (question 7 and question 15) suggest a way to identify a teaching point: they both refer to the different sounds smoke alarms make and what they mean. Other questions can be considered together as well. For example, question 15 ('what does it mean when the smoke alarm chirps') and question 18 ('if a smoke alarm uses regular batteries, how often should the batteries be replaced?') are both about smoke alarm batteries. And a similar percent of students answered these questions correctly (67% for question 15 and 62% for question 18), meaning that one-third or more of students answered incorrectly. This suggests the educator could focus on batteries in ways that emphasize what would happen if the batteries wear out.

(c) Looking at Learning about 'Concepts':

Look at all six questions related to smoke alarms (questions 7, 15, 16, 17, 18 and 30). Between one-quarter and one-third of students are unable to answer these questions correctly (26% answered question 7 incorrectly to 41% answering question 30 incorrectly). This might suggest simply that more time in the classroom needs to be spent on smoke alarms. However, it might also suggest a link to home. If children do not have smoke alarms at home, or if alarms at home do not have batteries, then what they learn in the classroom is not reinforced at home. The educator might consider a homework assignment to be completed with adults in the home that could raise awareness among adults and improve learning.

2. Reporting Effectiveness: Information from the evaluation can be used in reports and presentations to document effectiveness of teaching. In the database shown above, a high percentage of students answer the questions about match and lighter safety correctly. Using the answer choices to describe what children have learned, the results of the test could be presented in a report as:

- 82% of students know they should tell an adult if they see cigarettes or lighters

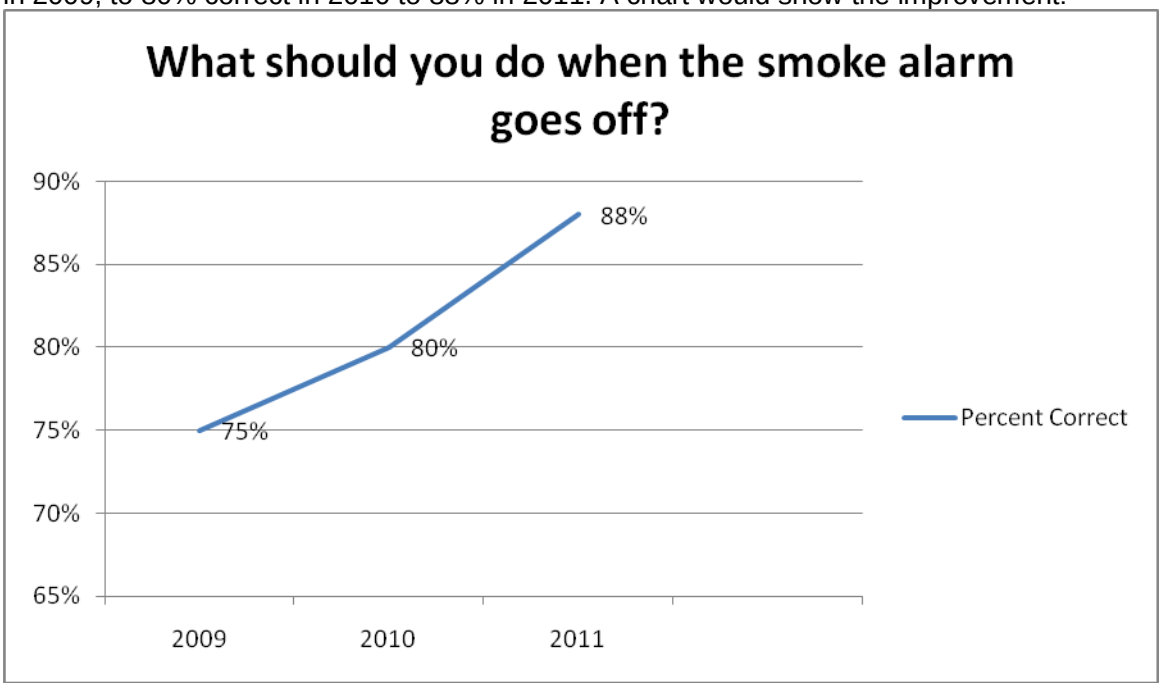
- Nearly 9 out of 10 third grade students (87% in the example above) know that matches and lighters are for grownups and that children should not play with matches and lighters.

3. <u>Setting Program Goals</u>: The same study of the data can help set and track program goals. Refer again to the questions about match and lighter safety, and about smoke alarms. Plans based on these findings might state:

> *Ourtown Fire Department plans to continue the match and lighter safety module we have been using, since evaluation data show this has been effective. However, we would like to improve student's grasp of the concept, introduced in third grade, that children may use matches and lighters only when adults are watching.*
>
> or
>
> *We plan to test a new module on smoke alarms to improve student learning. This module includes homework consultation with adults in the home. We hope to improve all scores related to smoke alarms, with a target of 80% correctly knowing what to do when a smoke alarm goes off.*

4. <u>Sustaining Funding</u>: Organizations that provide funding want to know that the efforts they support are effective. In addition to reporting the scope of fire and life safety education, such as number of children, classrooms and schools where teaching took place, you can report document what children have learned. This could be particularly striking as you document test results over several years.

For example, suppose Ourtown Fire Department experimented with new methods in teaching about smoke alarms, and learning about what to do when smoke alarms go off improved from 75% correct in 2009, to 80% correct in 2010 to 88% in 2011. A chart would show the improvement:



5. Fire Services S.A.F.E. Training and Technical Assistance: Evaluation data will be included in your reports to the S.A.F.E. Program. DFS can use this information to identify and plan training and technical assistance.

Here's an example: Suppose Program staff compared four towns.

TOWN	Questions about smoke alarms: Percent Correct					
	7: Smoke alarm goes off	15: Alarm chirps	16: What should he do	17: What smoke alarm does	18: How often replace batteries?	30: where to put smoke alarms
Westown	74%	67%	72%	67%	62%	59%
Eastown	72%	68%	74%	66%	60%	61%
Nortown	70%	65%	78%	62%	59%	68%
Newtown	76%	80%	77%	82%	82%	70%
AVERAGE	73%	70%	75.25%	69.25%	65.75%	64.5%

In the table above, three of the towns have similar results on questions about smoke alarms. But more students in Newtown are answering these questions correctly. Program staff could consider several possibilities. They might consider reviewing what is currently taught about smoke alarms. This might include reviewing the *Curriculum Planning Guidebook*, or looking for teaching material that could support educators. And they might ask Newtown Fire Department how they have been teaching about smoke alarms.