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Introduction

What is a Smart Starter?

A Smart Starter changes “extra” moments in a classroom setting into teachable moments. They are designed to be completed in short amounts of time. However, Smart Starters are NOT short on substance. The Smart Starters in this book are packed full of vitally important skills to practise and polish or to reinforce and extend.

When are Smart Starters used?

As their name suggests, they are good for igniting learning. Instead of the slow move into the class period, lesson or school day, a Smart Starter quick-starts the action. Each one warms up the brain with a sparkling challenge. Students also need this kind of spark at times other than the beginning of the day or class period. Use a Smart Starter any time there is a lull, or any time students need a break from a longer activity. They work effectively to stimulate thinking at the beginning, end or middle of a class period, or any other time that you can squeeze in an extra ten minutes.

Why use Smart Starters?

They’re energising! They’re stimulating! They’re fun! They nudge students to focus on a specific goal while “waking up” tired minds. They require students to make use of previously acquired knowledge and skills. Because of their short length, they ensure quick success and quick rewards – thus inspiring confidence and satisfaction for the learners.



How to Use This Book ...

Kick-Off A New Unit

The Smart Starters are grouped by general topics and skill areas. One or more of them might help to ease students into a new area of study. For instance, start off your unit on mathematical expressions with *What's That You Said?* or a graphing unit with *No Picnic*.

Spark A Longer Lesson

All starters can be expanded and extended. A Smart Starter may inspire your students to develop questions or examples along the same lines – expanding the warm-up into a full-blown maths lesson.

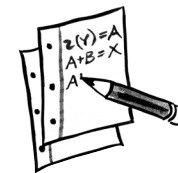
Review a Concept

Dust off those rusty skills with a Smart Starter. For instance: Have your students been away from the study of number concepts for a while? Refresh and deepen what they know about real numbers with *The Quick Line-Up* or *Disorderly Calculations*.

Charge-Up Thinking Skills & Ignite Creativity

The Smart Starters are not only for maths class. Use them any time to stimulate minds. Doing a Smart Starter will sharpen thinking processes and challenge brains. In addition, Smart Starters work well as starting points for students to create other similar questions and problems.

Skill: Compare & Order Real Numbers



The Quick Line-Up

This quick line-up requires sharp thinking and clear understanding of the values of real numbers. Print each of these numbers on a large card. Pin or give a card to each student. When you say, “GO!” their job is to get themselves (their numbers) in order, from least to greatest. (Two of the numbers are equal and will require students to stand together in the line-up!)

$\sqrt{81}$

64

0.9

7.7

-16

-66

40

27.5

-7.03

0.4

2.85

$\frac{4}{8}$

4^5

13.5

2.058

-32

$\sqrt{100}$

0.3

$\frac{2}{10}$

-18

32

$\sqrt{10000}$

$2\frac{3}{4}$

77

$\frac{3}{4}$

0.05

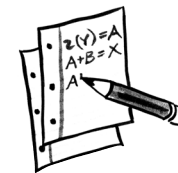
$-\frac{1}{2}$

5^3

-12

-6.6

Skill: Order of Operations



Disorderly Calculations

Order is critical in doing mathematical operations. You can get different answers to a problem, depending upon what operations are done when. Students can get a picture of the importance of order by trying some problems in different ways. Their challenge is to solve each of the following problems in three different ways (using different orders of operations) to get three different answers.

Example:

$$17 + 3 - 12 \times 6 + 2$$

$$(17 + 3 - 12) \times (6 \times 2) = 64$$

$$(17 + 3) - (12 \times 6) + 2 = -50$$

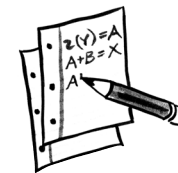
$$(17 + 3) - 12(6 + 2) = -76$$

A. $8 \times 4 \times 7 - 6 + 12$

C. $-10 \div 2 + 3 \times 8$

B. $200 \div 5 \times 5 - 12 \times 3$

D. $2 \times 40 + 90 - 16 \times 4$



What's That You Said?

When mathematical expressions are translated, the words must be stated carefully and precisely to reflect the exact meaning of the expression. Share the word translations A–J with students. Let them match these to the expressions in 1–10.

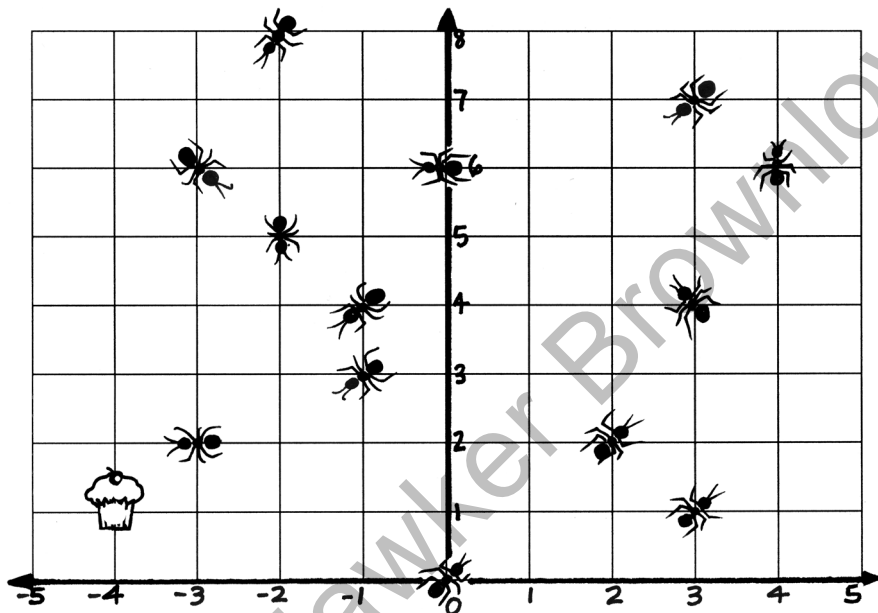
1. $20 \div (4 + n)$
2. $3(n - 10)$
3. $n - 40$
4. $n \div 40$
5. $20 \div 4n$
6. $6(n + 6)$
7. $n + -6$
8. $10 - 3n$
9. n^4
10. $4n$

- A. a number(n) divided by forty
- B. a number(n) multiplied by four
- C. six times the sum of a number(n) and six
- D. the difference between ten and three times a number(n)
- E. three times the difference between a number(n) and ten
- F. twenty divided by the sum of four and a number (n)
- G. twenty divided by four times a number (n)
- H. the sum of a number (n) and negative six
- I. a number (n) to the fourth power
- J. a number(n) reduced by forty



No Picnic

It's no picnic trying to catch all the ants on the table! First, you have to locate the ants. Find the coordinates of all the ants on the grid.



Write the coordinates for each ant:
