


## Executive Functions

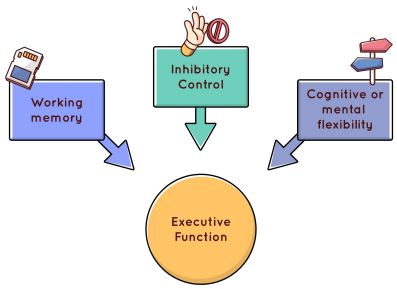
Executive functions are brain processes found in the prefrontal cortex of the brain. They are called executive functions because they help us to **execute tasks**.

Everyone has a unique executive function skills profile and can benefit from working to improve their executive function skills:

You can find out your unique EF profile for **free** here:

For your self
https://su.vc/executivefunction

For your children:
https://s.surveyanyplace.com/dczybljg




We work with **11 associated executive function skills -** see chart overleaf.

# Why are maths word problems so hard - EF perspectives and solutions

**Maths is recognised as one of life's most important skills, yet 35% of adults in the UK say Maths makes them anxious. Maths is so much more than knowledge of maths concepts and procedures, in involves all 11 of our executive function skills.**

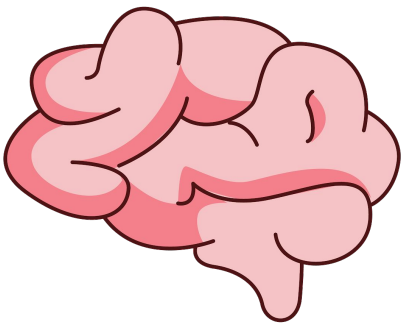
**Research abounds that executive functioning works in concert with procedural and conceptual knowledge for success in mathematics. We also know that executive function skills can be taught and developed.**

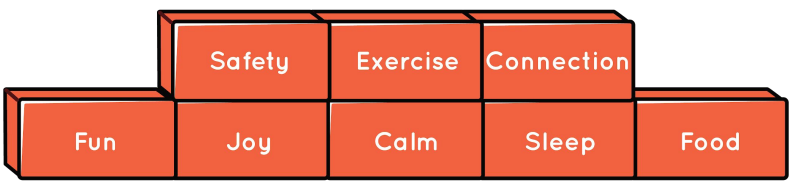
**This webinar will explore why this is, and suggest some workable strategies and tools that learners, teachers and parents can use to support the development of skills around maths word problems.**

"Executive cognitive functions operate in concert with procedural and conceptual knowledge" (Blair et al. 2008)

**How do you feel about maths word problems?**

## Building Blocks for Optimal Brain Functioning





# Executive Function Definitions

| Skill | Definition |
|---|---|
| Response inhibition  | The capacity to think before you act; this ability to resist the urge to say or do something allows your child the time to evaluate a situation and how his or her behaviour might impact it. |
| Working memory  | The ability to hold information in memory while performing complex tasks. It incorporates the ability to draw on past learning or experience to apply to the situation at hand or to project into the future. |
| Emotional regulation  | The ability to manage emotions to achieve goals, complete tasks, or control and direct behaviour. |
| Sustained attention  | The capacity to keep paying attention to a situation or task in spite of distractibility, fatigue, or boredom. |
| Task initiation  | The ability to begin projects without undue procrastination, in an efficient or timely fashion. |
| Planning/ prioritisation  | The ability to create a roadmap to reach a goal or to complete a task. It also involves being able to make decisions about what's important to focus on and what's not important. |
| Organisation  | The ability to create and maintain systems to keep track of information or materials. |
| Time management  | The capacity to estimate how much time one has, how to allocate it and how to stay within time limits and deadlines. It also involves a sense that time is important. |
| Goal-directed persistence  | The capacity to have a goal, follow through to the completion of the goal, and not be put off by or distracted by competing interests. |
| Flexibility  | The ability to revise plans in the face of obstacles, setbacks, new information, or mistakes. It related to an adaptability to changing conditions |
| Metacognition  | The ability to stand back and take a bird's-eye view of yourself in a situation, to observe how you problem solve. It also includes self mentoring and self evaluative skills (e.g., asking yourself, "How am I doing?" or "How did I do?" |

# EFS and Maths Word Problems

| Skill | Challenges in Maths Word Problems | Strategies |
|---|---|---|
| Working Memory  | Holding the conceptual information in mind.<br>Application of procedural knowledge. | CUBES (pg 4)<br>Visualising The Problem (pg 5)<br>Problem Breakdown (pg 6) |
| Flexibility  | Extract relevant data<br>Trial and improvement experimentation. | Problem Scaffold (pg 7)<br>Trial and improvement practice<br>Maths Key Words (pg 8) |
| Task initiation  | Overcoming the fear of getting it wrong. | Procrastination reflection (pg 9) |
| Sustained attention  | Avoiding distractions to keep focused on the task in hand. | Get the environment right first<br>Fidgets / stims |
| Planning/ prioritisation  | Which procedure is correct and which one first. | Rubrics or flow charts (pg 10) |
| Emotional regulation  | Managing sensory overload<br>Staying regulated when it feels too much. | Self Regulation strategies (pg 11)<br>5 senses (pg 12) |
| Goal-directed persistence  | Keep going when it gets hard. | Self Evaluation Form (pg 13) |
| Metacognition  | Awareness of dysregulation<br>Self evaluation and strategy. | Body mapping (pg 14)<br>Self Evaluation Form (pg 13)<br>EF building blocks (pg 15) |
| Organisation  | Having everything you need. | Equipment Checklist<br>Just incase box (spare equipment) |
| Time management  | Sensing time passing. | Visual Timer (sand or with red bar)<br>Estimate time for a task (who was the closest) |
| Response inhibition  | Stopping unexpected behaviours. | Children do well if they can.<br>Space between emotions/actions(pg16) |
| General | Not sure the challenge yet. | Self care planner (pg 17)<br>My Plan (pg 18)<br>WOOP templates (pg 19) |



# CUBES

Maths word problem checklist

| | |
|---|---|
| C | Circle numbers |
| U | Underline question |
| B | Box key words |
| E | Eliminate extra information |
| S | Solve & Check |

# Visualising The Problem



**Problem:**

**Visual Model / Diagram:**

**My Working:**

**Full sentence answer**



# Problem Breakdown



**Write out problem.**

**What is the problem asking?**

**Important numbers and units.**

**What operation (circle)?**

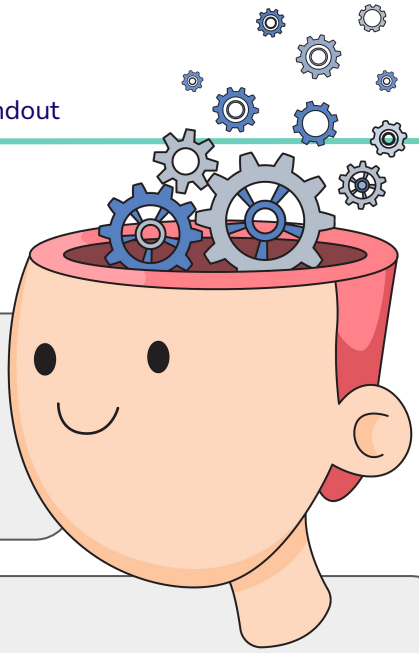
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**Show working.**

**Answer in word format.**



# Problem Scaffold



**Write out problem:**

**What kind of problem:**

**What I know:**

**What I don't know:**

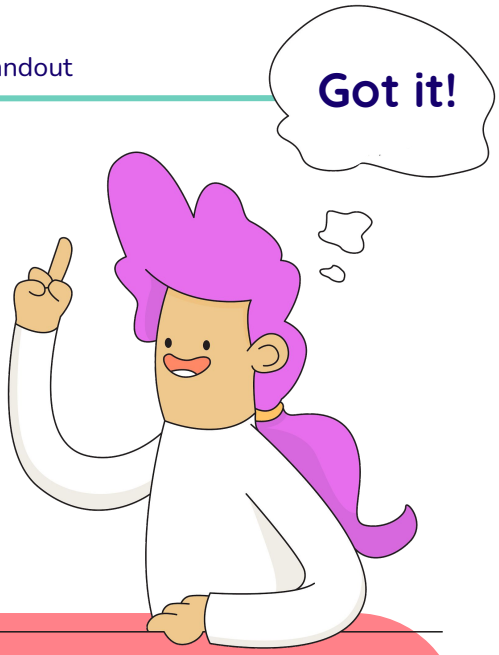
**Problem in my own words:**

**Problem drawn:**

**My calculation:**



# Maths Key Words




## Addition:

in all
increased by
more than
combined
total
sum
plus
added to
greater than
all together or altogether

## Multiplication:

times
every
groups of
rows of
of, by, at
multiplied by
____ times more (two times more)
product of
twice as much, three times...
each (in each box, they each...)

## Subtraction:

decreased by
minus
less
take away
difference
less than
fewer than
left, left over
smaller than
how many more
remaining

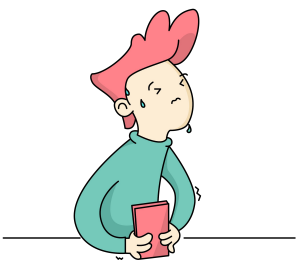
## Division:

per
out of
ratio of
quotient of
percent (divide by 100)
equal pieces, an equal amount
split
divided equally
each gets/each has
average
fraction of

# Procrastination Reflection

Complete with an adult to help them understand why getting started is hard for you.
Rank the most important as 1 and the least as 6.

| Reason | Rank |
|---|---|
| **Feeling Overwhelmed** – A feeling that there is too much that needs to be done;I feel frozen. | |
| **Task Unpleasant** – The task is boring or tiring or it will make me uncomfortable in some way. | |
| **Fear of Failing** – If I get started, and then can't do it, I will feel like I failed and I hate failing. | |
| **Looking foolish** - If I can't do it I fear being rejected or made to look like a fool. | |
| **Lacking Motivation** – I can't see the point of doing the task. The cost in terms of time and energy seem to be more than the benefits. | |
| **Lacking Focus** – I am unable to stay on task because something has come up for me and I can't concentrate. | |







# Word Problem Flow Chart

## Do I have the total?



**YES**

Are you making equal groups?

**YES**

**Divide**

| 75 | | |
|---|---|---|
| ? | ? | ? |

**NO**

**Subtract**

| 100 | |
|---|---|
| 35 | ? |

**NO**

Do you have equal groups?

**YES**

**Multiply**

| ? | | |
|---|---|---|
| 9 | 9 | 9 |

**NO**

**Add**

| ? | |
|---|---|
| 25 | 35 |

# SELF REGULATION STRATEGIES



focus on your breathing



relax your muscles



talk to your loved one





find a focus object

close your eyes



do light exercise





recognize your emotions



write down your thoughts

# 5 senses technique

focus on these when you feel anxious:

5 things you can see



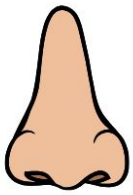
4 things you can feel



3 things you can hear



2 things you can smell



1 thing you can taste



# Self Evaluation Form

Complete to help you reflect on what when well and areas for improvement.

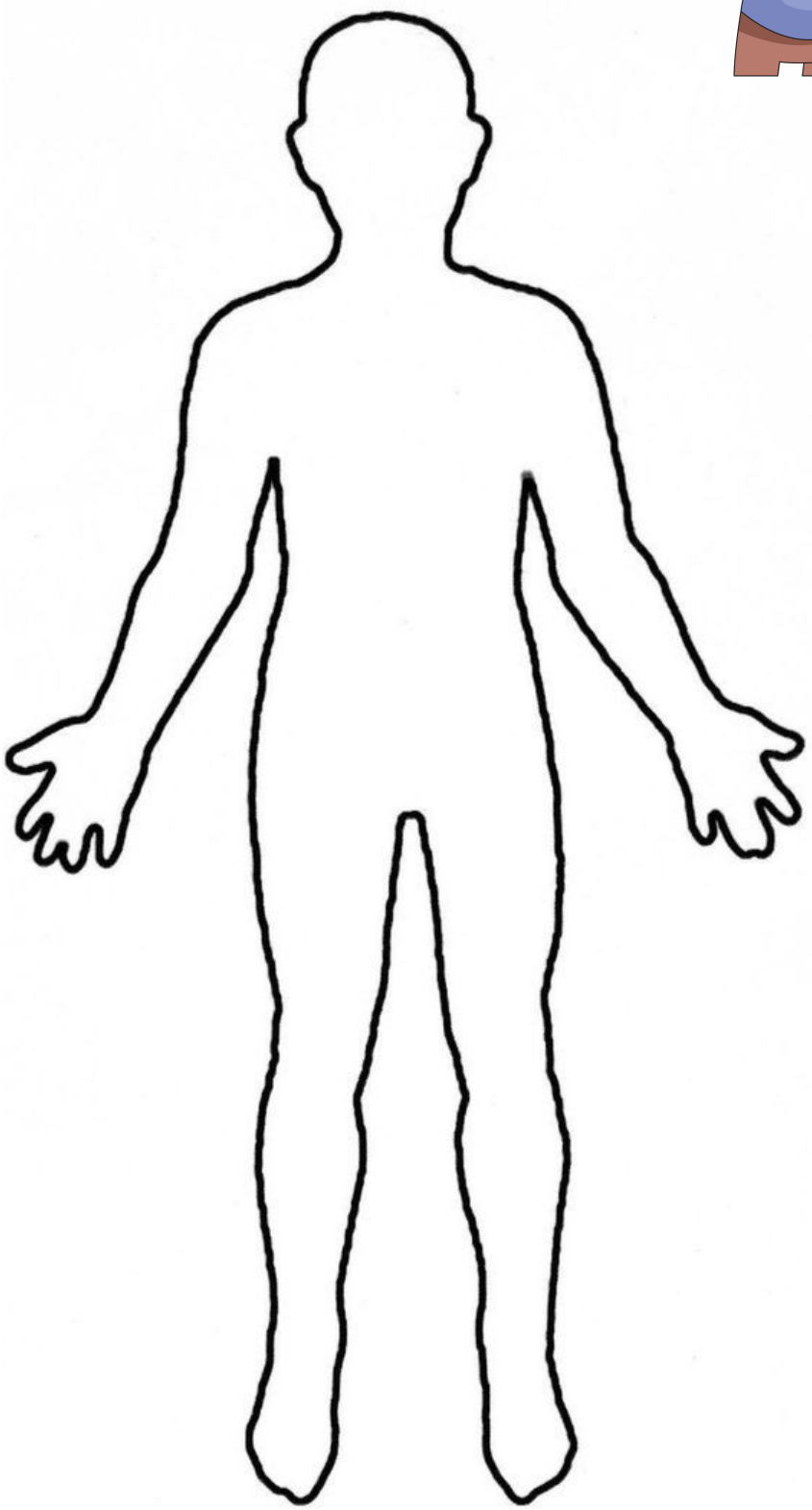
| **Task:** | | | |
|---|---|---|---|
| I knew what I had to do. |  Yes |  A bit |  No |
| I could follow the instructions. |  Yes |  A bit |  No |
| I was able to make sense of the problem. |  Yes |  A bit |  No |
| I used a strategy which worked for me. |  Yes |  A bit |  No |
| I could do the maths. |  Yes |  A bit |  No |
| I could explain my working. |  Yes |  A bit |  No |
| I asked for help when I needed it. |  Yes |  A bit |  No |

# Body Mapping

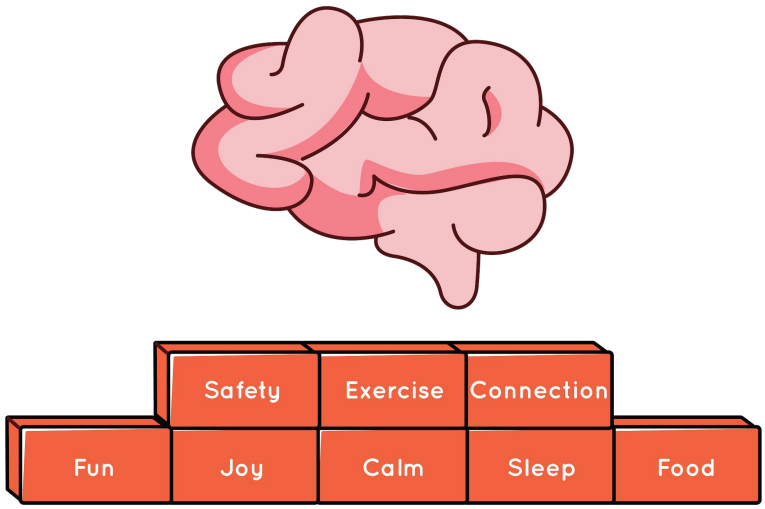


## How do my emotions manifest in my body?

**Instructions: Mark on the model where you feel your emotions. What is the sensation? How often I feel it? Use colours if it helps to visualise the feelings.**



# Building Blocks for Optimal Executive Functioning




**How would you rate your building blocks right now?**
(Circle below: 0=poor, 5=great)

| | 0 | 5 |
|---|---|---|
| **Safety** | | |
| **Exercise** | | |
| **Connection** | | |
| **Fun** | | |
| **Joy** | | |
| **Calm** | | |
| **Sleep** | | |
| **Food** | | |

Which of your blocks do you feel need attention?

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Do you have an idea as to why these may be low?

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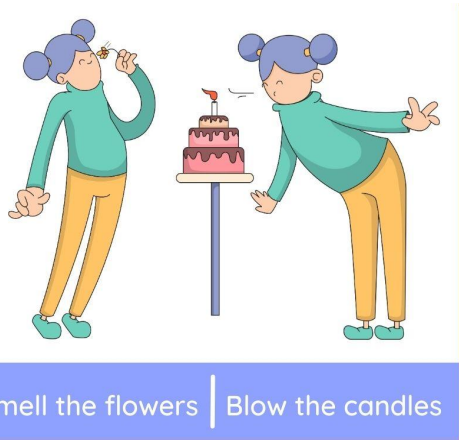
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# Making Space Between Our Emotions and Our Actions

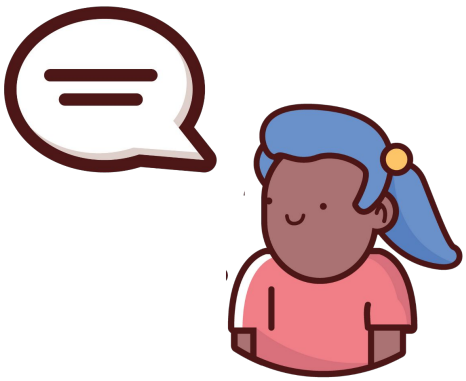
Often we take our emotions as directions to act in a certain way. It's hard, but we can make space between our emotions and our actions to give ourselves time to think about how to act.

## 1



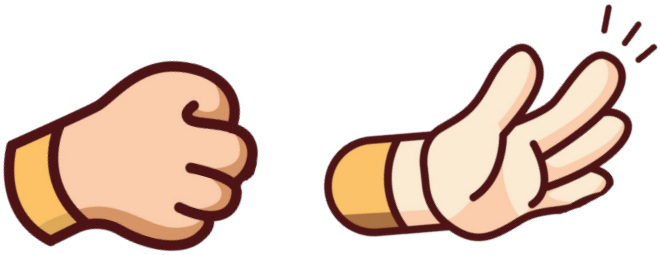

**Take 10 breaths**

## 2



**Slow down your speaking**

## 3



**Tense and release**



# Self-Care Menu

| Activity | Cost | Time Investment | Impact (1-5) |
|---|---|---|---|
| *Eg. Make a cup of tea* | *5p* | *5 mins* | *2* |
| | | | |
| | | | |
| | | | |
| | | | |
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| | | | |

# My Plan

## To improve my resilience to change

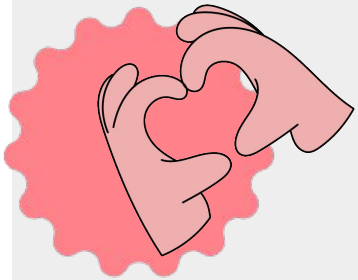


| | |
|---|---|
| **MY GOAL/WISH** *for the rest of the year* | |
| **OUTCOME** - *visualise how this will change my world* | |
| **OBSTACLES** - *what will get in the way?*<br>*Think about:*<br>• *My EFs*<br>• *Knowing my limits*<br>• *Sensory overwhelm*<br>• *Neglecting building blocks*<br>• *Other* | |
| **PLAN** - *use the obstacles to make a realistic plan.*<br>*How am I going to:*<br>• *Work on EF strategies*<br>• *Understand my limits*<br>• *Settle for good enough*<br>• *Find an accountability partner*<br>• *Prioritise my building blocks*<br>• *Other* | |
| **VERBALISE** - Who am I going to tell? | |
| **SUPPORT & ENCOURAGEMENT** - Who can help me stay on track? | |
| **MONITOR MY PROGRESS -**Decide a way to measure and track your progress | |
| **SMALL TWEAKS -** Minor adjustments using make it even better. | |
| **REWARDS -** Looking after myself - I am building my EFs, and I deserve it. | |



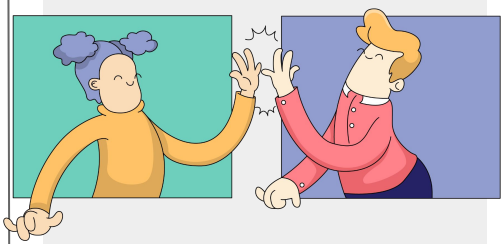
| | Instructions | My WOOP |
|---|---|---|
| W | What is an important **wish** you want to achieve? It should be challenging but realistic. | My Wish: |
| O | What would be the best **outcome** from achieving this wish. How will you feel? | Best Outcome: |
| O | What is the main **obstacle**, inside of you, which might prevent you from achieving your wish? | My Obstacle: |
| P | What is an effective **plan** to overcome your obstacle. Make a when-then plan. | Plan - When:<br>Then I will: |

# Looking for more support?



**1 on 1 coaching support?**

Find out more here: https://cimlearning.com/coaching/



**Have you seen our Connected Club?**

https://cimlearning.com/connected-club-membership-landing-page-1/

**Intro to Executive Functions course**
https://www.cimlearning.com/courses/intro-efs/

**Free Neuroplasticity Video**
https://www.cimlearning.com/courses/neuroplasticity

**Reading and Resources**
https://cimlearning.com/toolkits/

**Parent Facebook Group**
https://www.facebook.com/groups/executivefunctionssupportgroupparents

**Adult Facebook Group**
https://www.facebook.com/groups/204786124308836

**Schools Training & Support**
https://connectionsinmind.com/schoolseducators/

**Executive Function Coach Training**
https://cimlearning.com/coach-training/

**Support for Workplaces**
https://connectionsinmind.com/workplaces/

