

Math Tasks, Resources & Routines

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Math Tasks

Achieve the Core:

Rich math tasks aligned to standards

<https://achievethecore.org/category/416/mathematics-tasks>

Activities with Rigor & Coherence (ARCs)

“Each ARC is a series of lessons that addresses a mathematical topic and demonstrates the vision of *Principles to Actions: Ensuring Mathematical Success for All*”

<https://www.nctm.org/ARCs/>

Algebra by Example:

Example-based problem sets for Algebra 1

<https://www.serpoinstitute.org/algebra-by-example>

Bronx Zoo:

Spatial Analysis in Conservation

<https://bronxzoo.com/learn/educators/field-sight/spatial-analysis>

COVID-19 & Pandemics Math

Resources to teach about the pandemic using mathematics

<https://www.nctm.org/Coronavirus-and-Pandemics-Math-Resources/>

Dan Meyer:

Dan Meyer resources and 3-act tasks

<http://blog.mrmeyer.com/>

Exploding Dots

Non-base ten math exploration to promote place value understanding.

<https://globalmathproject.org/exploding-dots/>

Figure This!

Math Challenges from NCTM

https://figurethis.nctm.org/challenges/challenge_index.htm

Fraction Talks:

Visual, geometric fraction representations

<http://fractiontalks.com/>

G'Day Math:

Tasks and problems that promote critical thinking (Exploding Dots and others)

<https://gdaymath.com/courses/>

Great Tasks

NCSM Great Tasks (free samplers)

<https://www.mathedleadership.org/ccss/greataasks.html>

Greg Tang Math

Games, books, tasks, and more from the author of "Grapes of Math" and other favorites

<https://gregtangmath.com/>

Illuminations:

Rich math tasks aligned to standards

<http://illuminations.nctm.org>

Illustrative Math:

Rich math tasks aligned to standards

<https://tasks.illustrativemathematics.org/content-standards>

Making Math Moments:

Math tasks, including 3-act tasks

<https://learn.makemathmoments.com/>

Mathigon

Activities, explorations, tasks, and online "textbook" with themed modules grades 6-12

<https://mathigon.org/>

NCTM Math Task Resources

Page of websites with rich and rigorous problems

<https://www.nctm.org/classroomresources/>

NRich:

Source for student- and teacher-facing resources

<http://nrich.maths.org/>

Open-Up Resources:

6-8 problem-based curriculum

<https://access.openupresources.org/curricula/our6-8math>

Problem-Based Curriculum Maps

Problems based on CCLS and the associated scope and sequences from thoughtful math bloggers who have advanced our practice by posting their materials online. Gr 3-HS

<https://emergentmath.com/my-problem-based-curriculum-maps/>

Problem of the Week:

Source for rich problems

<https://www.cemc.uwaterloo.ca/resources/potw.php>

Problems of the Week, NCTM:

Source for rich problems

<https://www.nctm.org/pows/>

Radical Math / Social Justice Math:

Socially justice oriented context problems and non-Eurocentric resources:

<http://radicalmath.org/main.php?id=SocialJusticeMath>

Robert Kaplinsky Lessons

Free, downloadable “open middle” and real-world problems

<https://robertkaplinsky.com/lessons/>

Three-act tasks:

Overview & getting started: [Linked here](#)

Dan Meyer’s Three-Act Tasks organized by standards: [Linked here](#)

Graham Fletcher Three-Act Tasks: <https://gfletchy.com/3-act-lessons/>

Various 3-Act tasks adapted for online learning: [Linked here](#)

YouCubed:

Jo Boaler’s website for rich tasks and teacher resources: <https://www.youcubed.org/tasks/>

YouCubed specifically for remote learning: [link here](#)

Math Resources for Teachers (professional learning, teaching platforms, assessments, etc.)

Anti-Racist math teaching resources

“A collection of resources, readings and techniques for people who want to combat racism in the math classroom.”

[Linked here](#)

Balanced Assessment:

Large range of assessment tasks created at the Harvard Graduate School of Education
<http://balancedassessment.concord.org>

End-of-Year Math Assessments and Summer Learning Experiences for Remote Learning
[Link to introductory PPT](#)
[Link to folder with resources](#)

EquatIO

Chrome add-on that makes writing math equations easier.
[Click here](#)

Eureka Math (aka EngageNY):

Knowledge on the Go (free streaming lessons)
<https://gm.greatminds.org/en-us/knowledgeonthego>

Fraction Learning Progressions for Teachers

Article, resources, tasks, and PD for teachers on the importance of deeply understanding fraction3concepts
[Click here](#)

Freckle:

Adaptive skill-based program
<https://www.freckle.com/>

GeoGebra:

Free online math tools for graphing, geometry, 3D, and more
<http://geogebra.org>

Houghton-Mifflin:

Free learn-at-home resources
<https://www.hmhco.com/coronavirus>

How to Learn Math:

Online course for students from YouCubed (in English and Spanish)
[linked here](#)

Khan Academy:

Free, comprehensive online learning platform
<https://www.khanacademy.org/>

Math Collective:

Teacher resources for standards-aligned, differentiated teaching
<http://www.mathcollective.org/>

Math Forum:

Online hub from NCTM

www.mathforum.org

NRich:

Source for student- and teacher-facing resources

<http://nrich.maths.org/>

Problem Attic:

Resource that lets teachers create their own assessments from a comprehensive database

<https://www.problem-attic.com/>

Reimagined Teaching

“Bursts” courses to learn different reasoning routines

<https://reimaginedteaching.learnworlds.com/>

Shell Center - Mathematics Assessment Center:

Tools for formative and summative assessments

<http://map.mathshell.org/materials/index.php>

Video Mosaic project:

Videos of students learning mathematics

<http://videomosaic.org>

YouCubed:

Jo Boaler’s website for rich tasks and teacher resources

<https://www.youcubed.org/tasks/>

Zearn:

Free online learning platform; very aligned to Eureka Math

<https://www.zearn.org/>

If you are using Zearn for remote learning, they’ve [released this guidance](#) for lessons aligned to essential content. Some of this agrees with the [Remote Learning Pacing Guide](#). You will want to balance their guidance with that.

Math Routines & Games

*Check out this PPT with comprehensive descriptions of **four types of mathematical routines**. Includes resources, articles, and examples from digital classrooms.*

[Linked here](#)

Between Two Numbers

Comparison and estimation routine matched with real-world, visual examples.

<http://www.between2numbers.com/>

Card Games from Eureka Math:

Collection of fluency games students can play with a deck of cards

[Linked here](#)

Connecting Representations

Connect different representations of the same mathematical concept
<http://www.fosteringmathpractices.com/connecting-representations/>

Estimation 180:

Routines and problems to increase number sense
<http://www.estimated180.com/>

IM Talking Math

Progression of images to promote math talk
[click here](#)

Interactive deck of cards:

Deck of cards and spinner you can use to adapt games online
<http://playingcards.io/2dhuhu>

Making Math Visual

Routines, including Notice & Wonder, that promote “seeing” mathematics
<https://buildingmathematicians.wordpress.com/2018/05/07/making-math-visual/>

Math is Visual

“Conceptual understanding of mathematics through the use of visuals”
<https://mathisvisual.com/>

Math Visuals

Variety of math routines using images
<https://mathvisuals.wordpress.com/>

Mathematically Productive Instructional Routines

Source for six 5-10 minute math routines
<https://www.learning-space.org/Page/58>

Notice & Wonder

Notice and wonder resources from NCTM
<https://www.nctm.org/noticeandwonder/>

Number Boxes:

Multiplication game
<https://jennalaib.wordpress.com/2019/05/29/one-of-my-favorite-games-number-boxes/>

Number Strings:

Community for designing math number strings
<http://numberstrings.com>

Number Talk Images:

Images to use a launch point for number talks

<http://ntimages.weebly.com/>

Numberless word problems:

Teaching structure for building number sense

<https://bstockus.wordpress.com/numberless-word-problems/>

Quick images for subitizing:

Subitizing quick images

<https://stevevyborney.com/2018/09/100-subitizing-slides-10-challenge-patterns/>

Routines for Reasoning

Book with reasoning routines. Explanation with routines linked below

<http://www.fosteringmathpractices.com/routinesforreasoning/>

Same, But Different Math

Visual representations that illuminate mathematical relationships

<https://www.samebutdifferentmath.com/>

Sense-making routines

Collection of different mathematical routines

[Click here](#)

Splat!

Part-Whole quick images

<https://stevevyborney.com/2018/09/splat-for-google-slides-40-lessons/>

Steve Wyborney's blog

Estimation, multiplication, and part/whole routines

<https://stevevyborney.com/>

TERC Investigations games:

Pearson Realize page of online versions of popular games from this curriculum

<https://media.pk12ls.com/curriculum/math/Investigations3/gamecenter/english/index.html#>

Three-act tasks:

Dan Meyer's Three-Act Tasks organized by standards: [Linked here](#)

Graham Fletcher Three-Act Tasks: <https://gfletchy.com/3-act-lessons/>

Various 3-Act tasks adapted for online learning on Desmos: [One collection linked here](#), [another page with banks of tasks](#)

Visual Images

Visual patterns and images for number sense routines

<https://www.alllearnersnetwork.com/visual-images-number-sense-routines>

Visual Patterns; grades K-12:

Number sense and spatial awareness routines

<http://www.visualpatterns.org>

Which One Doesn't Belong:

Math routine

<http://wodb.ca/index.html>

Online Math Manipulatives and Tools (for students and teachers)

Brainiaccamp

Online manipulatives and tools

<https://www.brainiaccamp.com/>

Desmos

Online graphing, data, and equation tools

<https://www.desmos.com/>

Didax Education

Online manipulatives and tools

<https://www.didax.com/math/virtual-manipulatives.html>

EngageNY tools

Online interactive tools aligned specifically to the EngageNY curriculum

<https://www.geogebra.org/m/ua4yNy75>

Geogebra

Online manipulatives and tools

<https://www.geogebra.org/>

GoFormative

Online platform similar to PearDeck that allows you to monitor student work in the moment

<https://goformative.com/>

Link to pre-made Formatives for common math curricula: [click here](#)

Illuminations Interactive Tools (from NCTM)

All interactive tools can be found [here](#)

A few favorites...

[Isometric drawing tool](#)

Volume tools: [nets/layers](#), [build a cube](#)

[Equivalent fractions](#)

Math Learning Center:

Online whiteboard apps with variety of manipulatives and tools. **New!** They now have a feature that allows you and students to share their representations with other.

www.mathlearningcenter.org/resources/apps

Mathigon

Online, interactive tools

<https://mathigon.org/polypad>

Mathsbot

Online, interactive tools

mathsbot.com

Online interactive whiteboards

[AwwWhiteboard](#)

[Explain Everything](#)

[Jamboard](#)

[Math Learning Center](#)

Pearson

Free access to online tools; Available in Spanish

<https://media.pk12ls.com/curriculum/math/Tools/MTindex.html>

Toy Theater

Online manipulatives and tools

<https://toytheater.com/category/teacher-tools/virtual-manipulatives/>

Visnos

Online manipulatives and tools

<https://www.visnos.com/demos>

Virtual Math Center

Digital tools all in one place

[Click here](#)

Blended Learning Resources

Math-Specific Blended Learning Resources

Guidance and Resources from NCTM and NCSM

“In this document, we show how effective practices for mathematics teaching and learning can provide helpful direction to address the challenges that teachers, school leaders, and policymakers face now and will continue to face in the months ahead.”

[Click here](#)

Moving Forward

NCTM/NCSM joint statement on launching learning in 2020

https://www.mathedleadership.org/docs/resources/NCTM_NCSM_Moving_Forward.pdf

What Should Math Learning Look Like When We Get Back to School?

Webinar from NCTM with specific guidance for 2020-2021 school year and examples of math routines that can be adapted for blended & remote learning.

[Click here](#)

General Blended Learning Resources

Blended learning basics

Article on how to combine face-to-face and online learning

<https://www.edutopia.org/blog/blended-online-learning-heather-wolpert-gawron>

Article on the difference between emergency remote and online learning

[Linked here](#)

Blended Learning Revolution

“How 5 teachers are modifying the Station Rotation to fit students’ needs”

<https://www.christenseninstitute.org/wp-content/uploads/2017/07/Blended-Revolution.pdf>

Blended Learning Universe

“Blended learning can be implemented in many unique ways, generally using a combination of one or more of the following models.”

<http://www.blendedlearning.org/models/>

Engagement Strategies

“8 Strategies to Improve Participation in Your Virtual Classroom”

<https://www.edutopia.org/article/8-strategies-improve-participation-your-virtual-classroom>

ISTE Standards

Standards for multiple stakeholders for safe, high-quality digital instruction

<https://www.iste.org/standards>

Mastery Collaborative

Guidance on using a mastery approach to grading, which is particularly relevant to blended learning

<http://www.masterycollaborative.org/#home>

Modern Classroom Projects

Comprehensive how-to guidance for blended learning

<https://learn.modernclassrooms.org/>

Online Teaching Excellence

“Strong decision-making skills can help educators build engaging and welcoming virtual classrooms”

<https://www.gse.harvard.edu/news/uk/20/07/what-makes-excellent-online-teacher>

Station Rotation Teaching:

Articles on using station rotations for blended learning

<https://www.christenseninstitute.org/wp-content/uploads/2017/07/Blended-Revolution.pdf>

<https://www.blendedlearning.org/3-secrets-to-successful-station-rotations/>

Remote Learning Resources

Cameras Off & Virtual Instruction

Giving students the option to turn their cameras off may make them more comfortable and open up new possibilities for teaching.

<https://www.edutopia.org/article/engaging-students-virtual-instruction-camera>

DOE DIIT Online Learning PDs/Webinars

Ongoing professional learning from the NYC DOE on online learning platforms

[Linked here](#)

Dos and Don'ts of Online Teaching

Graphic with suggestions

[Linked here](#)

Educational Leadership Issue on Remote Learning

Magazine special issue on remote learning

[Linked here](#)

End-of-Year Math Assessments and Summer Learning Experiences for Remote Learning

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[Link to folder with resources](#)

Independent ("techless") Learning Resources

Packets K-12 for students aligned to NYC DOE core curriculum

[Linked here](#)

Math Collective - big idea videos for remote learning

Teacher/coach created videos that frame big ideas for major K-5 math concepts

[Linked here](#)

Remote Teaching Guide

NYC DOE guide for transitioning to online learning

[Linked here](#)

SMAR Model

A Powerful Model for Understanding Good Tech Integration

<https://www.edutopia.org/article/powerful-model-understanding-good-tech-integration>

Student Collaboration

Suggestions for building student collaboration opportunities remotely

[Linked here](#)

Teach from Home Resources

NYC DOE web page with resources for teaching from home

[Linked here](#)

Trauma-Informed Remote Teaching

Article

[Linked here](#)

Two-Teacher Model for Online Lessons

“A two-person model can improve the flow and engagement in virtual lessons”

<https://achievethecore.org/aligned/keep-virtual-live-lessons-running-smoothly-takes-two/>

Wide-Open Schools

Collection of online platforms for all subject areas with free access during remote learning

<https://wideopenschool.org/programs/educator/prek-5/math/>