

**Use of Mathematics  
Manipulatives & Materials**  
*separately yet together*

**a collection of K-9 resources  
Fall 2020**

## Individual Math Kits

Providing students with individual math kits allows for opportunities for students to engage in mathematical learning experiences with concrete and visual materials while adhering to health and safety protocols.

### Some considerations:

- Think of the individual math kits as a base kit and include essentials that will be used all year long. You can add more specific materials temporarily throughout the year as necessary and remove them when that area of study is completed.
- Many math manipulatives and tools are available in printable form or your school may have a die-cut machine that has templates for materials such as pattern blocks and tangrams. Paper, construction paper and cardstock is considered safe. Laminating makes it less safe as plastic holds the virus and it is also not good for the environment. Cardstock is the most durable and often needs to be used through a separate feed in school copiers. Many printable math manipulatives, tools and templates are available free of charge online. As an example, search for “free printable base ten blocks pdf” online. One source for many printable manipulatives for elementary and secondary can be found here: <https://www.mathematicalpractices.com/mp1e/content/printable-manipulatives/>
- Involve your students in the creation of their math kits. Have them cut out some of the printed components or count out the number of counters they need. Ask the students what materials or tools might be helpful to them or are preferred. You may have some core materials that everyone has but some students might prefer a ruler to a measuring tape for example.
- Use some sort of sealable container to avoid spills and allow for the container to be stacked or added to a student's tub. Include the student's name on the container. Some suggestions for containers are: pencil pouch, case or box, “Tupperware” type container, clean take-out food containers with a secure lid (some of these are sectioned and teachers are finding them in bulk at Costco) or a large “Ziploc” bag. If you are providing students will full size paper printables, you might consider a plastic sleeve or folder.
- Use manipulatives for materials from your classroom or school resources. Ask your administration for additional funds to support this essential and Covid-compliant component of your classroom program.
- Keep a record of what school-based resources are used. In case of a student/s having to learn from home, their individual math kit can be sent home with them.
- Accompanying each kit you will want to have some sort of temporary writing surface such as an individual whiteboard or a plastic page protector that you can slip paper templates or plain cardstock into. Each child will need to have at least two differently coloured dry-erase markers.



# Individual Math Kits

## Suggested Components

### Kindergarten and Grade One

- a set of twenty counters
- two regular dice
- a set of dot cards or playing cards
- a five frame mat
- two ten frame mats
- a small cardstock Splat!
- character/animal for math stories

### Grades Two and Three

- a set of 20-30 counters
- two regular dice
- a set playing cards
- two ten frame mats
- a small cardstock Splat!
- a set of cardstock base ten blocks
- a ruler or measuring tape
- one of each kind of pattern block or set of die-cut paper pattern blocks



### Grades Four and Five

- two regular dice
- two 12-sided dice (for multiplication)
- a set of playing cards
- fraction tiles/bars (have students use rulers and/or fold to make)
- square tiles for investigating area and perimeter (could have students cut out of construction/paper, cardstock)
- a set of cardstock base ten blocks (for number operations and decimals)
- a ruler or measuring tape
- one of each kind of pattern block or set of die-cut paper pattern blocks

### Grades Six and Seven

- two regular dice
- two 12-sided dice (for multiplication)
- a set of playing cards
- 10-20 two-sided counters (for integers)
- a set of cardstock base ten blocks (decimals, fractions, percentages)
- fraction tiles/bars (have students use rulers and/or fold to make)
- one of each kind of pattern block/ set of die-cut paper pattern blocks
- a protractor



### Grades Eight and Nine

- two regular dice
- two 12-sided dice (for multiplication)
- a set of playing cards
- fraction tiles/bars (have students use rulers and/or fold to make)

### Ideas to add throughout the year:

- print paper play money to use for simulated financial transactions, payments, making change etc
- print and laminate the following for use with a dry erase marker:
  - geoboard
  - 100 or 120 chart
  - ten frames
  - marked number line
  - open number line
  - grid for graphing
  - four quadrant grid for coordinate graphing

## Small Group Materials

It is possible to use manipulatives and materials with small groups of students, following health and safety protocols.

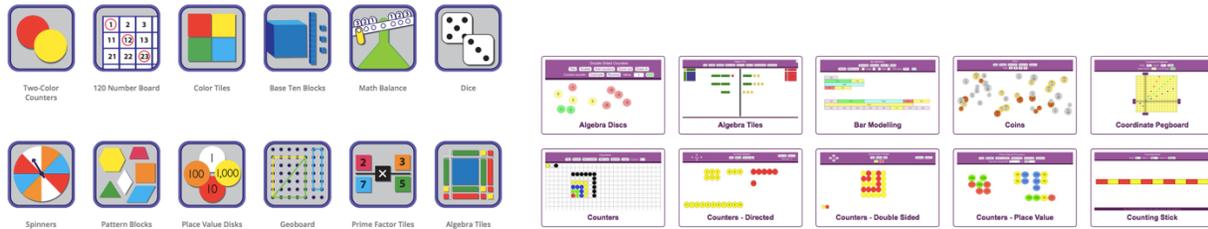
### Considerations:

- When using materials, have a designated set of materials for each group. Do not circulate materials or have students change their small group. Some teachers are doing this by “table group” and have a bin or basket they set out for each group.
- Students wash their hands before and after using shared materials.
- An example is a teacher in the district has decided to do card games every Monday and dice games on Thursday and then let those materials sit aside for the following week so disinfecting isn't necessary.
- Plastic materials are the safest to use at this time as they can be most easily disinfected.
  - To disinfect plastic or glass manipulatives or materials or sealed/painted wood materials, our district recommends the use of the QUAT spray provided in each classroom. Do not use this spray around students. While students are out of the classroom or at the end of the day, spray the surface you will be laying out the materials on (to get the bottom of the materials coated) and lay the materials down and then spray them. Leave the materials overnight to dry. The materials are not to be rinsed after being sprayed.
  - Plastic materials can also be placed in a mesh bag and put in the dishwasher and go through a complete washing and drying cycle.
- If you use porous materials such as wood, the safest practice is only use them once or twice a week (ie “Wood Wednesdays) and then let them sit aside for 72 hours.
- Paper materials are considered safe to use such as ten frame mats, paper tangram pieces, die-cut construction paper pattern blocks etc.
- Any laminated materials must be wiped down with disinfectant on both sides after use.
  
- Consider using plastic tubs or bins to hold shared materials as these can most easily be disinfected by setting them aside for 72 hours, spraying with the QUAT spray or getting put through a cycle in the dishwasher.



# Virtual Manipulatives

As an alternative to physical manipulatives and materials, there are many suites of virtual manipulatives that are available free of charge and are easily accessible through web-based or app platforms. Students can use virtual manipulatives and screenshot or screencast their work to post to their e-portfolios or email it to their teacher or “airplay” to the classroom projector/screen to share with the class.



A district blog post about using virtual manipulatives can be found here:  
<https://blogs.sd38.bc.ca/sd38mathandscience/2020/06/19/virtual-manipulatives/>

Information provided by Chris Loat, District Curriculum Coordinator (Technology):

## Free Apps

To add a free app to a school district iPad, staff or students can tap on the 'Self Service' app, find the app they want to load, and then tap on the install button. If the free app is not in the list on 'Self Service', then teachers can request that an app be loaded onto an iPad (or class set of iPads) by submitting a [tech work order](#). Please include the link to the specific app and the asset numbers of the devices you want the app added to. Also, as part of the typical use of the app, student personal information can't be requested and the app must also be pedagogical in nature. Assuming the work order is fulfilled, the app will be added to Self Service and students / staff can load the app from there.

# Disinfecting Tech Devices

The following information with shared with our schools' Ed Tech Mentors from Chris Loat, District Curriculum Coordinator (Technology):

## How should we clean the technology in our schools?

We have a variety of technology devices that are used throughout our educational environment and used by multiple individuals, such as iPads, shared laptops and computer lab keyboards. Keeping these devices clean and sanitary is important for the health and safety of our users.

It will not be possible for custodians to manage disinfecting shared devices, such as an iPad cart, multiple times a day. Therefore, if staff plan to use these devices with their students, they will need to help share the responsibility to disinfect them before use, and again after use, using the guidelines outlined below:

- **Unplug all external power sources and cables before cleaning**
- **Apply the approved spray bottle cleaner (QUAT 128) to a lint free soft cloth. (Do not apply the liquid directly to the device).**
- **Avoid getting moisture into any openings**
- **Gently wipe the hard, nonporous surfaces of your product, such as the display, keyboard, or other exterior surfaces.**
- **Avoid abrasive cloths, towels, paper towels or similar items**
- **Avoid excessive wiping which may cause damage**
- **Don't use aerosol sprays, ammonia-based or chlorine-based cleaners, bleaches or abrasives**

It is also recommended that users demonstrate good personal hygiene, including frequent hand washing with soap and water, before and after using these devices.