



***Understanding the Use of Social Media
and Its Impact on School Suspension***

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Whitewater Middle School

This curriculum unit is recommended for:
7th Grade Middle School

Key words: Coordinate plane, covariance, equation, constant of proportionality, origin, percent of change, proportional reasoning, rate, ratio, Out-of-School Suspension, In-School Suspension, Instagram, Facebook, Snapchat.

Teaching Standards: See [Appendix 1](#) for teaching standards addressed in this unit.

Synopsis: Over the past ten years the use of social media among middle school students has exploded. This unit attempts to understand social media usage among middle school students and how this connects to disciplinary infractions at school. Students will use proportional reasoning and data analysis to study the use of social media among their peers and identify infractions that result in school suspensions. The unit will also help students understand the impact that discipline issues can have on their learning.

I plan to teach this unit during the coming school year to about 75 to 100 students in 7th grade.

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Introduction

Social media is dominating the lives of children across the nation. More children own their own smartphones and electronic devices now compared to 15 years back.¹ According to Common Sense media, a nonprofit organization, 42% of children younger than 8 years have their own tablet device compared to less than 1% in 2011. The prevalence of devices is seen in both low and high income families. A report found that in 2017 found that 96% of the lower income families and 99% of high income families had a mobile device at home.² Thus it is comes as no surprise that children are spending more and more time online texting, on social media, online and gaming. These new set of teens are referred to as the iGen.³ Born in 1995 or later, the iGen have grown up with electronic devices and have not known a world without the internet. Though there is nothing overtly good or bad about technology, excessive usage can have harmful effects. The use of the smartphone has dominated their social interactions and their mental health.⁴

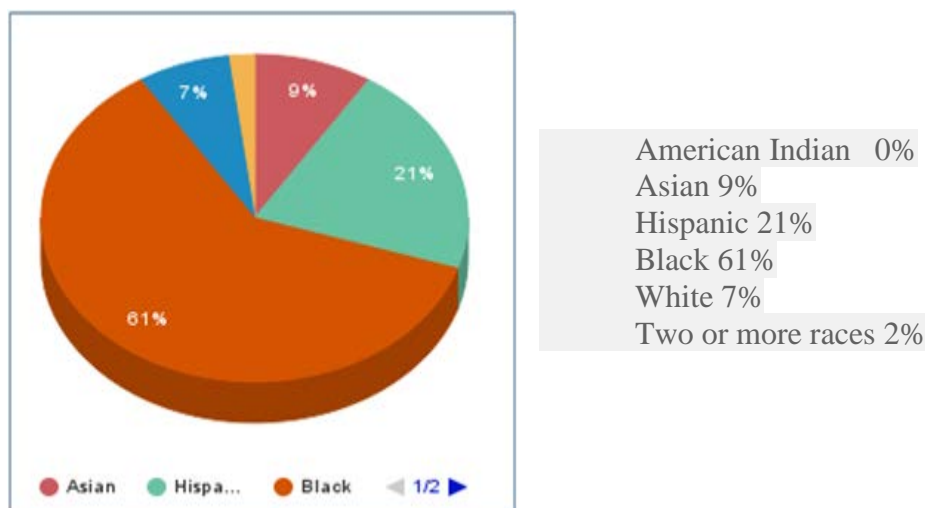
Out of the various media platforms, Snapchat and Instagram are the most popular. “In fall 2016, the management firm Piper Jaffray found that only 30% of 14-year-olds used Facebook at least once a month, compared to 80% using Instagram and 79% using Snapchat.”⁵ Snapchat, a smart phone application that sends pictures, is a special favorite of young teens who use it to communicate with their peers. The teens love using applications with filters that add cartoonish props to the photographs they send. They receive a snap for every snap they send or receive making it competitive and encourage chatting with their friends. Teens state that this is a safe way to connect with their friends. These teens stay indoors over the long summer vacation with their phones rather than go outdoors and interact with their friends.

The ownership of the devices by children and teens has led to various effects on the lifestyles. Teens are more likely than before to spend time indoors on their devices rather than outdoors. Dr. Jean M. Twenge states that “in 1969, 48% of elementary and middle school students walked or rode a bicycle to school. By 2009, only 13% did. Even among those who lived less than a mile from school, only 35% walked or bicycled in 2009, down from 89% in 1969.”⁶ Boys are interested in video games, Xbox game, and playing video games online which allows multiplayer’s to play each other online in which they can talk to other players through the headset. Also, it will not let them paused the game to do something else therefore they are online for hours. “In 2015, 27% of teens said they played video games less than an hour a week, and 9% said they played more than forty hours a week – the time commitment of a full-time job.”⁷ The girls are more interested in social media and Candy Crush. The girls are looking for positive comments and likes therefore, they are tempted to post sexy and revealing photos which get the most likes. They are receiving affirmations from various people that keep them constantly checking their phone even while doing their homework. “It’s like someone is constantly tapping you on the shoulder, and you have to look.”⁸ These teens feel as they cannot live without their phone which most of them would become very stressful. Instagram, you can see what each person is doing at the moment and you can follow them and have followers. The boys are also involved in gaming along with commenting on social media.

Technology has changed the way these teens interact with each other to build relationships and has a major impact on how they spend their time. Compared to five years back, the current teens are spending less time together with each other and more time alone with their devices. Immediately after school the students spend time on their smartphones and iPads. The primary way to communicate with their friends is by texting. In the quest of keeping up to date with the messages, teens tend to sleep with their phones within arms' reach. They are obsessed with their online profiles and likes. The phone is the last thing they look at before going to sleep and the first thing they look at in the morning. Even when they wake up in the night teens tend to check their phones. They say that they just cannot help it. The excessive usage of the phone interferes with their sleep patterns and the lack of sleep with their overall mental health. Overuse of the digital media has also led to teens reading fewer books. Chatting with each other is popular with girls. Though the teens are interacting a lot on social media, they have not fostered rich and lasting relationships with each other. Teens who spend extensive time on social media report that they are more likely to be unhappy and feel lonely. This is usually the case of younger teens.

School Setting

Whitewater Middle School was opened to alleviate overcrowding at Coulwood and Wilson Middle School. Then, 2011 to 2012 school year there were several schools that closed which had a major increased in the population at WMS. The school is a Title 1 school with 93% minority enrollment and of the student body majority is black or African Americans which are more than the state average of 50%, and 99% is eligible for free lunch. The student population has grown over five years since the year 2010 to 2015 from 581 to 924 students which is an increase of 7%. The pie chart below shows the breakdown of the population by race of students enrolled at Whitewater Middle School (WMS) according to Public School Review (Public School Review 2015).



My case load consist of one honor, two standard, and one inclusion 7th grade mathematics classes that range from 20 to 25 students per class with a mixture of boys and girls. The North Carolina Department of Public instruction requires teachers to teach all 7th grade students the five standards for Common Core for which an End of Grade (EOG) assessment will determine student's level of knowledge on the standards. The five standards and EOG weight distribution consist of Number Systems 7 to 12%, Ratios and Proportional Relationships 22 to 27%, Expressions and Equations 22 to 27%, Geometry 22 to 27%, and Statistics and Probability 12 to 17%.

Rationale

Teaching mathematics at WMS for the past six years I have seen that our suspension rate has increased a lot. As I build a relationship and interact with my students I have noticed that many times the source of the fights and arguments are because my students are engaged in social media (Facebook, Instagram, and Snapchat). For example, a friend not being tagged in Instagram can be a reason for conflict as the teen with the picture assumes that he/she is not a friend. Learning mathematics is the very last thing from some of their minds due to drama from the night or day before. Many of the issues from the neighborhood and the community are discussed and debated online leading to an escalation in physical conflicts. Students throughout our district risk being suspended due to interactions over social media because of what has been said or posted on online platforms like Facebook, Instagram, and Snapchat. They are living for the right now moment and not for their future, therefore unaware of their decision today will determine their outcome for the future.

In this unit I will help the students visualize the amount of time they spend on their devices and the consequences this has on their future, especially its role in conflicts, and as a consequence, school suspensions. In writing this curriculum unit, I want students to take away a deeper understanding of their own morals, values, respect, and beliefs as well as reverse behavioral problems. On the other hand, connect my student's reality to the power of mathematical understanding and becoming lifelong learner as a citizen. The unit will use data that students will collect base on a survey and students will have the opportunity to connect and explain the connections between the different data representations.

Unit Goals

The North Carolina Common Core Standard in 7th grade math Ratios and Proportional Relationship provides the framework of goals and objectives. In this curriculum unit the following standards will be address:

- 7.RP.1: Understand and compute unit rates and ratios involving proper and improper fractions.
- 7.RP.2: Understand and determine if two quantities are in a proportional relationship by looking at a table or graph and write an equation from the context.
 - (a). Testing for proportional relationship
 - (b). Identify the constant of proportionality
 - (c). Interpret the order pairs on a coordinate plane
- 7.RP.3: Understand proportional reasoning to solve problems with cross-multiplication.

This curriculum will address each of these standards in full detail exploring the mathematics in understanding the social media usages among teens.

Content Research

In 1995 the Internet was born and those who were born there after grew up with the Internet which Dr. Twenge names the iGen (Internet Generation). In 2006, Facebook was opened up to anyone over the age of 13. In 2007, the iPhone was introduced and in 2010 the iPad. The i in the names of these devices stands for Internet, and the Internet was commercialized in 1995.⁹ Also, Dr. Twenge identified ten important trends shaping iGen'ers and, ultimately, all of us: In No Hurry (the extension of childhood into adolescence), Internet (how much time they are really spending on their phones-and what that has replaced), In person no more (the decline in in-person social interaction), Insecure (the sharp rise in mental health issues), just to name a few.¹⁰

The Charlotte Observer reported that, Charlotte Mecklenburg Schools (CMS) suspension rates is one of the top 10 issues the state is facing in 2017.¹¹ In CMS, black students rate of 32.1 suspensions per 100 students, compared with 8.4 for Hispanics, 3.6 for whites and 2.3 for Asians. The School Report Card grade has a lot to do with suspension data which WMS ranked 5th highest suspension rates within CMS, 2015-2016 incidents of 660 out-of-school suspension. Also, black males alone accounted for more than half of the 23,648 suspension in CMS.

Due to the adverse consequences of the internet use, the Charlotte Mecklenburg Schools (CMS) has implemented Common Sense Media for teachers, parents and students. Digital Citizenship for Middle Schools by CMS is a course students will be guided through several modules that include videos, articles and vocabulary terms. Students will take a short quiz after taking the course. The course is fully online using Canvas Learning Management System. This year all of the 7th grade teachers are giving students two days of digital citizenship lesson.¹²

Instructional Implementation

In this unit we will identify what are the incidents or behavioral for school suspension in WMS and across grade levels within the school with similar incidents. Compare each grade level suspension rates within WMS and find the percent of change from 2015-2016 and 2016-2017. The students will track the suspension data on a line graph, table, histogram and pie chart for each grade level every three months to show the trends or increase or decrease rates. Each block will be responsible for tracking either on line graph, table, histogram or pie chart to have data visible in the classroom. List the incidents that are associated with the social media from the survey, for example, games, pictures, videos, and Snapchat etc. This is what brings drama into the classroom which could cause an argument then school suspension. Also, in this unit, students should understand the following terms: ratios, unit rates, proportional relationships, proportions, complex fractions, and constant of proportionality (COP). Students will analyze proportional relationships and use them to solve real-world and mathematical problems.

Day 1

The first day, I will engage the students in a class discussion about school suspension. I will have the students come up with the categories that cause school suspension and list them on the board. I will also, have a conversation about social media and what sites/apps are most popular. Students will gather the information and create their own survey questions to ask their peers. Some of the sample question listed below will help to get the discussion started. An exit ticket will be given to complete the survey, the use of social media questions for survey as follows:

- How much time you spent on social media last week?
- How much time do you spend texting last week?
- How much time do you spend on the internet last week?
- How much time do you spend on games last week?
- How much time do you spend watching videos last week?
- How much time do you spend on Instagram last week?
- How much time do you spend on Snapchat last week?
- How much violence contract do you see on social media? Please circle only one – A lot, A little, or Never
- Do you feel that social media influence you in anyway? Yes or No
- How much time do you spend watching TV per week?

In this unit, students learn how to find equivalent ratios and identify proportions. I will begin with defining a proportion as a statement that two ratios are equal and since ratios can be written as fractions. If, necessary, demonstrate how to find the common denominator and determine whether the fractions are equal. I will model the examples and students will take notes as we discuss and work through each problem.

Students will compute unit rates with ratios of fractions in real-world problems. Fractions compared to fractions with like or different units that can be proper or improper. Students will use a proportional box to setup units for example,

YouTube	1/2	1
Hour	1/6	X

Word Problem:

Tony is trying to finish $\frac{1}{2}$ of his YouTube video every $\frac{1}{6}$ hour. How many hours will it take

Tony to complete his whole YouTube video? Cross multiply to setup equation $\frac{1}{6}X = \frac{1}{2}$

To get X by itself divide the coefficient on both sides. A complex fraction is a fraction divide by another fraction. $\frac{\frac{1}{2}}{\frac{1}{6}} \quad x = 3$

Students will continue to work either in pairs or independent solving problems using the proportional box showing their work as I monitor and give feedback instantly to each student.

Some misconceptions: Sometimes the format of a complex fraction confuses 7th graders when they are used to seeing fractions division written horizontally as \div . It is helpful to discuss how the division bar in the complex fraction means the same as the symbol \div . Students may not read carefully – does it ask to compare to total? However, checking for understanding of the material while students are working independently is essential. Ensuring students are reading questions carefully, having an exemplar ready to compare to students' work.

Vocabulary

These are the vocabulary and definitions for Proportional Relationships which students will take notes: Complex fraction: a fraction with a fraction in the numerator and/or a fraction in the denominator

Covariance: a measurement of how related the variances are between two variables. The extent to which any two random variables change together or vary together

Equivalent ratios: ratios that have the same value

Ratio: comparison of two quantities

Rate: ratio that compares two quantities of different units such as 7 miles per hour

Proportion: two equal ratios

Unit rate: ratio comparing an amount to one

Day 2

The second day, students will continue to work on creating the survey questions for their peers to complete. Note that the wording of the items is key to ensure that proper data is collected. We will discuss how the items can be made simple and clear so that their peers can understand what is being asked. Once the survey is completed I will create a Google form for 7th grade students to answer either as a warm-up/do now or exit ticket on the third day. I will review complex fractions and ratios by questioning students, for example, I will ask students to raise their hand if they can tell me the definition for complex fraction, and ratios. I will model using the proportional box along with randomly pulling students' names to answer questions as I model each step.

I will upload word problems into Canvas for students to work independent solving problems and submit their work back to me in Canvas for a class assignment grade. Students will take an exit ticket to check for understanding of complex fractions and ratios.

Day 3

The third day, students will use the data from their peers' survey about social media as a group of four to a team they will compile the data into a table, histogram, pie chart and line graph. Analyze the data by gender, Instagram, Snapchat, Facebook, classes (1st, 2nd, 3rd, and 4th blocks), 7th grade teachers, and games.

I will have students setup a proportion box so that the units are set for the appropriate number. When comparing two different units it is called a rate. Student may not realize that they use rates in everyday life. Rates can be used to observe patterns, determine the cost of one item and predict future data. It may be helpful to show students a picture of the "unit price" that is displayed in stores this is a real-world example of unit rates – where you are calculating the cost of just one of item.

Instagram	50	X
Snapchat	25	1

Cross multiply to setup equation $25X = 50$

Students will determine if two quantities are in proportional relationship from a table, and graph on a coordinate plane to see if the line is straight and go through the origin. Students will identify the constant of proportionality (unit rate) in tables, graphs, and write an equation as well as interpret the order pairs. Students will identify the coefficient as the unit rate which is also the constant of proportionality (COP or k).

Students will be able to calculate the unit rate such as; 3 likes in 10 minutes, how long will it take you to get 50 likes? Also, 30 minutes on social media every day. If you live for 7300 more days how many minutes will you spend on social media? Answer is 219,000 minutes

I will model lining up the units in the proportional box as well as constantly asking students how we know where the variable goes. We know because that's what we're looking for and it is the unknown. Having students restate the question may help them if they are struggling to identify the variable and annotate word problems. I will highlight key words such as "entire" or "whole" that indicate 1 in word problems. I will model simplifying every time so students get extra exposure.

Students will emphasize two methods for deciding whether a proportional relationship exists. One method is to use equivalent ratios in table. If the ratios are equivalent, then the tables have a proportional relationship. The other method is to use a coordinate plane to graph and determine whether the graph is proportional if it is a straight line that goes through the origin. Students will create a graph to determine if two quantities are proportional relationship. X is the independent variable and Y is the dependent variable. An example, how many hours could be on the x -axis and number of incident on the y -axis.

I will have students making predictions about which one is better and then solving. This is a fun and engaging activity for students to get extra practice. Two ways to engage students are: (1) students stand on one side of the room to vote either yes or no, and (2) students will vote closing their eyes which I will write the results on the board and then we solve and check our predictions with proportion boxes.

Some misconceptions: students may not label proportion box with units and errors in division.

Vocabulary

These are the vocabulary and definitions for Proportional Relationships which students will take notes:

Coordinate plane: a plane formed by the intersection of a horizontal number line (called the x -axis) with a vertical number line (called the y -axis). The number line intersect at the zero points is called the origin.

Proportional reasoning: multiplicative reasoning as opposed to additive reasoning.

Day 4

On the fourth day we will discuss the interpretation of the data, especially, the relationship between usage of social media and suspension data. Students will look at their own data from last year and compare that data to this year once they collect the data from all the 7th grade classes. It is only a small sample but students should be able to see the comparison between the two years (about two or three hundred students). Comparing the amount of time that girls and boys spend on social media. I will question students about the table such as what row is the y-axis and x-axis showing them both tables horizontal and vertical. I will have a discussion about the graph with students asking them to explain the meaning of each point and to justify their response. There are several ways to represent proportional relationship such as equation, graph, and table.

During the course of the discussions, the students will discuss the results related to social media usage and the time spent watching Youtube or other media sites. I will highlight excessive usage of these online platforms and engage the students in a discussion about the possible consequences of this time spent online. Note that the goal is to get the students to talk about their social media usage through the mathematics and also understand possible consequences of this excessive usage. We will discuss school suspensions and the possible role that the online platforms play in facilitating conflict.

I will give students proportional reasoning scenarios to be sure they understand the meaning of proportional relationships in context. I will give examples of equivalent and non-equivalent ratios for students to determine if a table is proportion or not. Students will have to determine if all of the entries in the table are proportional by dividing the y-axis by the x-axis. I will also ask students to give the COP or k and write an equation.

I will also have students graph two ratios on a coordinate plane from a proportional scenario and look for a straight line that goes through the origin to determine if the two ratios are proportional. I will also have students select other points on the graph and determine if they are proportional or not.

Students will explain in writing how the table and graph shows a proportional relationship. They will also understand that the numerical coefficient in the equation is the unit rate or COP. I will give students a real-world worksheet problem with tables and graphs for practice.

Students will take an exit ticket to check for understanding of today's lesson.

Day 5

The fifth day, students will use proportional relationships to solve multistep ratio and percent. One example, percent increase and decrease from last year to current year between 7th grade infractions.

$$\text{Percent of change} = \frac{\text{Amount of Change}}{\text{Original Amount}}$$

Find the percent error is the process of expressing the size of the error (or deviation) between two measurements.

$$\text{Percent error} = \frac{\text{Estimated value} - \text{actual value}}{\text{Actual value}} \times 100\%$$

For percent increase/decrease, students identify the starting value and determine the difference, and compare the difference in the two values to the starting value. Students will use the proportional box method to solve percent of change and percent error using cross-multiplication.

To make a connection between social media usage and school suspension, I examined the suspension data from School A (real name not used) over a four month period. I put the data in an Excel Spreadsheet (Appendix 2). I used a pivot table to make a summary of the data (Appendix 2). My goal was to understand the common reasons for student suspensions and see if any of these reasons are prompted or magnified by the social media usage of the students.

The top five from data 2015 to 2016 total of 651 OSS and 2016 – 2017 total of 415 OSS are as follows:

1. Fighting
2. Physical Aggression/Aggressive Behavior
3. Insubordination
4. Inappropriate Language/Disrespect
5. Disruptive Behavior

According to the CMS, Office of Accountability, Department of Research, Evaluation, and Analytics the top five infractions for both 2015 – 2016 and 2016 – 2017 are:

1. Fighting
2. Aggressive Behavior
3. Insubordination
4. Disruptive behavior
5. Inappropriate Language/Disrespect

These top five are the same for all schools in the district that are similar to in comparison with WMS and CMS.

Activities

I can have the students use their computer to login to Gapminder World graph to have a visualization of the data for both social media and out of school suspension.

I will setup error analysis scenarios where students will work in group of four to solve problems and complete error analysis of peer's work (carousel). Student will identify errors and correct their peer's work which is an activity. The instruction to this activity is as follows: Everyone on the team has to work the problem out on line paper. Once the team agrees on the answer they will designate one person to show all the work and write the answer on the poster paper using the appropriate color for that round. Round 1 is red, Round 2 is green, Round 3 is black, Round 4 is purple They will have to read the directions for the appropriate round in order to check and make corrections of their peer's work (feedback on students' work) using the appropriate color. Discuss as a team using the context vocabulary. I will set the timer for them to complete the problems or questions (5 to 8 minutes).

Students need close reading and teacher modeling annotation strategies to help students with word problems.

Vocabulary

These are the vocabulary and definitions for Proportional Relationships which students will take notes:

Percent change: a ratio that compares the change in a quantity to the original amount.

Percent error: the ratio of the error compared to the exact value.

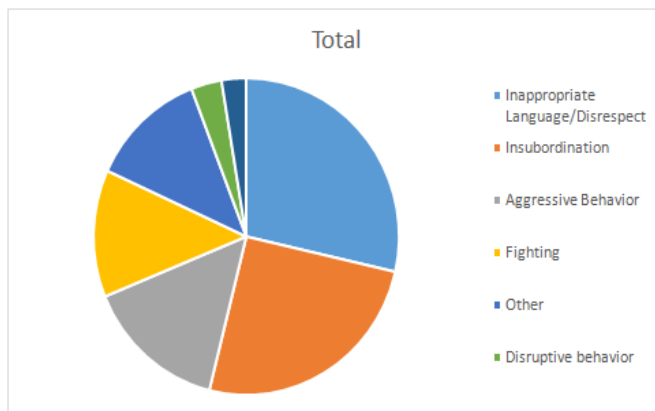
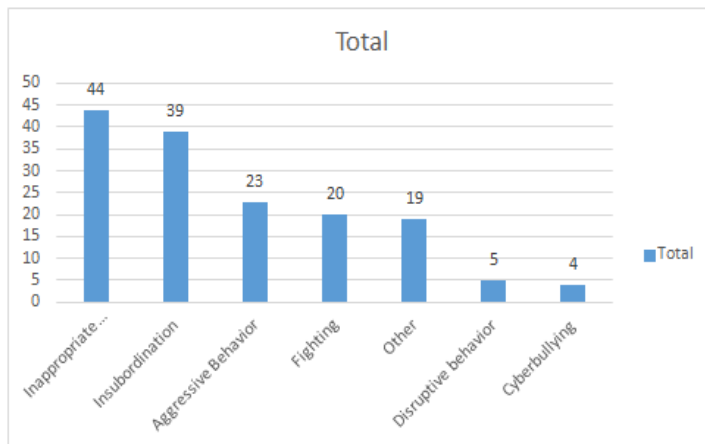
Percent increase/decrease: the amount of increase or decrease expressed as a percent of the original amount.

Differentiated Instruction – I will use graphs to model proportional and non-proportional relationships. Student will make the connection through tables, graphs, ratios, and proportional relationship. Students will have a choice board to choose which 4 problems they would like to do, each problem is worth 25 points. Anchor chart references

Technology Instruction – I will use the computer to give students their assignment on Canvas and they will submit the assignment back to me. They will complete a Spreadsheet to work with a larger data set. Some of the resources in Appendix 3. The lower classes read aloud and have students track on screens – Google read and write.

I used the actual data with 154 incidents over a three month period and a Pivot table to design the visualizations shown below. Other teachers can use district data, classify the incidents and then design a similar visualization for their context.

Data On Disciplinary Incidents From An Anonymous School



Appendix 1

<p>Common Core Standard for 7th Grade Ratios and Proportional Relationship</p>	<p>Unpacking What does this standard mean that a student will know and be able to do?</p>
<p>7.RP.2 Recognize and represent proportional relationships between quantities.</p> <p>a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.</p> <p>b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. Represent proportional relationships by equations. For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as $t = pn$.</p> <p>c. Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.</p>	<p>7.RP.2 Students' understanding of the multiplicative reasoning used with proportions continues from 6th grade. Students determine if two quantities are in a proportional relationship from a table. Fractions and decimals could be used with this standard.</p> <p>Note: This standard focuses on the representations of proportions. Solving proportions is addressed in 7.SP.3</p>
<p>7.RP.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error</p>	<p>7.RP.3 The use of proportional relationships is also extended to solve percent problems involving sales tax, markups and markdowns simple interest ($I = prt$, where I = interest, p = principal, r = rate, and t = time (in years)), gratuities and commissions, fees, percent increase and decrease, and percent error. Students should be able to explain or show their work using a representation (numbers, words, pictures, physical objects, or equations) and verify that their answer is reasonable. Students use models to identify the parts of the problem and how the values are related. For percent increase and decrease, students identify the starting value, determine the difference, and compare the difference in the two values to the starting value.</p>

Appendix 2

Snippet of suspension data from School A. Note that this is anonymous data to protect the identity of the school and students.

A	B	C	D
Column1	Title	Incident Type	Incident Location
1	Insubordination	Discipline	Classroom
2	Aggressive Behavior	Discipline	Classroom
3	Fighting	Discipline	Classroom
4	Aggressive Behavior	Discipline	Hallway
5	Inappropriate Language/Disrespect	Discipline	Classroom
6	Inappropriate Language/Disrespect	Discipline	Classroom
7	Aggressive Behavior	Discipline	Hallway
8	Fighting	Discipline	Cafeteria
9	Insubordination	Discipline	Classroom
10	Other	Discipline	Classroom
11	Inappropriate Language/Disrespect	Discipline	Hallway
12	Fighting	Discipline	Classroom
13	Aggressive Behavior	Discipline	Classroom
14	Inappropriate Language/Disrespect	Discipline	Classroom

Pivot table that I used to summarize the data

Row Labels	Count of Title
Inappropriate Language/Disrespect	44
Insubordination	39
Aggressive Behavior	23
Fighting	20
Other	19
Disruptive behavior	5
Cyberbullying	4
Grand Total	154

The screenshot shows the 'PivotChart Fields' task pane. At the top, it says 'Choose fields to add to report:' with a search box. Below that, a list of fields is shown: 'Column1', 'Title' (checked), 'Incident Type', 'Incident Date', and 'Incident Location'. Below the list, there are four sections: 'FILTERS', 'LEGEND (SERIES)', 'AXIS (CATEG...', and 'VALUES'. The 'VALUES' section contains 'Count of Title'.

Appendix 3 Teacher Resources

Visualising Data - <http://www.visualisingdata.com>

Pitch Interactive - <http://www.pitchinteractive.com>

Tableau Public - <http://public.tableau.com/s/gallery>

Tableau Public, which allows for creation of interactive visualizations with the users' own data.

Representation is a dynamic time series graph that can be found at <http://www.gapminder.org>
Interactive graphs of otherwise lifeless numbers this was to increased use and understanding of statistics and data that specifically focus on social, economic, and environmental development both locally and globally.

Excel Spreadsheets and Pivot tables: <https://www.youtube.com/watch?v=9NUjHBNWe9M>

This is just one of many resources on YouTube related to pivot tables. These tables summarize large data sets and allows the user to slice the data in various ways. The pivot tables can also be used to visualize the summary data.

Straightforward Statistics, Chieh-Chen Bowen
An easy introduction to basic statistics and visualizations

Appendix 4

Public Schools of North Carolina State Board of Education Department of Public Instruction, Report to the North Carolina General Assembly. Some extracts from the report are below.

SUSPENSIONS AND EXPULSIONS

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Section 1. Short-Term Suspensions	26
Section 2. Long-Term Suspensions	34
Section 3. Multiple Suspensions	43
Section 4. Expulsions	46
Section 5. Suspensions and Expulsions by LEA and Charter	50

One of nine North Carolina high school students received at least one out-of-school short-term suspension in 2015-16. Many students received only one suspension each year, but a number of students received multiple short-term suspensions. High school students who received short-term suspensions in 2015-16 averaged 1.85 suspensions each. The average total duration of short-term suspensions for high school students who received at least one suspension was 6.53 days. The average duration of a single short-term suspension was 3.53 days. The grade 9-13 short-term suspension rate was 1.96 suspensions per ten students.

Acts	Number of Acts 2014-15	Number of Acts 2015-16
Possession of a Controlled Substance in Violation of Law	4,672	4,639
Possession of a Weapon	3,052	2,746
Assault on School Personnel	1,272	1,329
Possession of Alcoholic Beverage	950	934
Sexual Assault not including Rape or Sexual Offense	105	82
Possession of a Firearm or Powerful Explosive	86	118
Bomb Threat	78	69
Assault Involving Use of a Weapon	49	39
Assault Resulting in Serious Injury	43	29
Sexual Offense	28	16
Burning of a School Building	8	8
Robbery with a Dangerous Weapon	1	9
Rape	1	1
Taking Indecent Liberties with a Minor	1	0
Kidnapping	1	0
Death By Other Than Natural Causes	0	1
TOTAL	10,347	10,020

Appendix 5: Classroom Materials

Graph paper

Data from last year

Survey

Notes (Composition Book)

Color pencils

Color dry erase markers

Poster paper

Notes page

1. (Howard 2017)
2. (Howard 2017)
3. (J. M. Twenge 2017) pg. 2
4. (J. M. Twenge 2017) pg. 2
5. (J. M. Twenge 2017) pg. 57
6. (J. M. Twenge 2017) pg. 164
7. (J. M. Twenge 2017) pg. 58
8. (J. M. Twenge 2017) pg. 56
9. (J. M. Twenge 2017) pg. 2
10. (J.M. Twenge 2017) pg. 3
11. (Helms 2017)
12. (Common Sense Media 2016)

Annotated Bibliography

7th Grade Mathematics Unpacked Content

<http://www.ncpublicschools.org/docs/curriculum/mathematics/scos/7.pdf>

(accessed June 10, 2017).

Public School Review

<https://www.publicschoolreview.com/whitewater-middle-school-profile/28214> (accessed June 9, 2017)

Charlotte Observer

<http://www.charlotteobserver.com/news/local/education/article130030719.html> (accessed June 10, 2017).

Data on Charlotte Mecklenburg Schools District regarding Out-of-School Suspension Rate

CMS January 2017 Data Summary incidents and suspensions by the Office of Accountability

https://navigator.cms.k12.nc.us/Attendance%20Documents/,DanaInfo=navigatorext.cms.k12.nc.us,SSL+DS%20suspensions_mid-year%201617_Final_.pdf (accessed June 10, 2017) CMS

Navigator

School Environment

<http://www.ncpublicschools.org/src/guide/environment/>

Discipline Data and Collection Process

<http://www.ncpublicschools.org/research/discipline/>

Reportable Criminal Offenses

<http://www.ncpublicschools.org/research/discipline/offenses/>

Annual Reports

<http://www.ncpublicschools.org/research/discipline/reports/>

Report to the North Carolina General Assembly

<http://www.ncpublicschools.org/docs/research/discipline/reports/consolidated/2015-16/consolidated-report.pdf>

Youth and Consequences

<http://infoweb.newsbank.com/resources/doc/nb/news/13382BF3D2047510?p=WORLDNEWS>

(accessed May 20, 17).

Today's decisions determine tomorrow

<http://infoweb.newsbank.com/resources/doc/nb/news/133DB21F8FAC38E8?p=WORLDNEWS>

(accessed May 20, 17).

The Briefing factsheets Hillary Clinton's "Breaking Every Barrier Agenda": Ending the School-to-Prison Pipeline (accessed May 20, 2017)

<https://www.hillaryclinton.com/briefing/factsheets/2016/02/18/ending-the-school-to-prison-pipeline/>

Jean M. Twenge, *iGen: Why Today's Super-Connected Kids Are Growing Up Less Rebellious, More Tolerant, Less Happy and Completely Unprepared for Adulthood* (New York, NY: Atria Books, 2017)

They were born after 1995. They grew up with cell phones, had an Instagram page before they started high school, and do not remember a time before the internet. They are different from any generation that came before them. They are one in four Americans. They are iGen. And they have arrived.

<http://www.cnn.com/2017/10/19/health/children-smartphone-tablet-use-report/index.html>

(accessed October 21, 2017)

Jacqueline Howard, CNN speaks on kids under 9 spend more than 2 hours a day on screens.

<https://www.ncbi.nlm.nih.gov/pubmed/26151870>

<https://www.commonsensemedia.org/> (accessed October 21, 2017)

The nation's leading nonprofit organization dedicated to improving the lives of kids and families by providing the trustworthy information, education, and independent voice they need to thrive in the 21st century.

Charlotte Mecklenburg Schools (CMS) has implemented Common Sense Media for teachers, parents and students. Digital Citizenship for Middle Schools by CMS is a course students will be guided through several modules that may include videos, articles and vocabulary terms.