

6th Grade Math

Books and Supplies: Saxon Math 76 Textbook (2nd Edition)

A Note about Standards: While I normally include standards covered with each lesson, I simply don't have the space to do so in math. I have constructed math lessons with two things in mind. First, to cover every standard. If you finish the math program you will have covered all of Utah 2nd Grade Core Standards for math. I have added supplemental lessons (below) to ensure those standards that Saxon doesn't include are covered. Secondly, I've taken into account the layout of the Saxon program. The book does not teach the lessons in units. It does, however, build upon each lesson using what was learned in previous lessons. Rather than organizing units, I've decided to follow the Saxon program to ensure that the review portion of the lessons is covered before expecting your child to do it in the workbook. The lessons that are skipped in the Saxon book are ones that do not specifically meet standards for Utah 6th Grade. This does not mean that you have to skip them. You may want to use them as a part of a "review day" lesson.

Saxon Math Program: Each Saxon lesson includes instruction, examples with solutions, practice, and problem sets. Review the instruction and example with your child as needed for each lesson. Then, ask your child to work through the problem set on their own, correcting it and providing additional instruction as needed.

Review Days: Every so often your child will have a Math Review Day. Take time on this day to review a lesson or concept that your child hasn't fully grasped. Cover a lesson again, find a math game that can teach it, work on flash cards and math fact mastery, or let your child choose one of their favorite worksheets to do again. If your child has mastered everything, do one of the skipped lessons, read and prepare a fun recipe, play a card or board game (most of them have a math element), or take the day off from math.

Prodigy: Prodigy is a great review for math concepts throughout elementary. It's a fun game that really has helped my visual learner to make connections because it motivates him to get the right answer. You can sign up with a free account [here](https://sso.prodigygame.com/game/start?rid=e5186a1d-5420-4a2a-9a36-4a29ec60352f) (https://sso.prodigygame.com/game/start?rid=e5186a1d-5420-4a2a-9a36-4a29ec60352f)

Supplemental Lessons:

Lesson 1: Distributive Property Review

Review the following lesson with your child and then ask them to do the worksheet for this lesson.

Explain that there is a trick to finding multiplication products (or answers) when you are multiplying. This trick is called the distributive property and can help when multiplying large numbers. It states that:

$$a \times (b + c) = ab + ac$$

Use the following example to work through a problem with distributive property with your child:

$$5 \times (3 + 2) =$$

We can solve this problem two different ways. We could do the problem within the parenthesis first, and then solve those outside of the parenthesis:

$$5 \times (3 + 2) =$$



$$5 \times 5 = 25$$

Or, we could use the distributive property:

$$5 \times (3 + 2) =$$

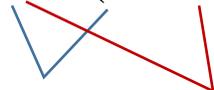


$$5 \times 3 + 5 \times 2 =$$

$$15 + 10 = 25$$

Point out that we got the same product with both methods. Work through the following with your child using distributive property

$$6 \times (9 + 8) =$$



Finally, show your child this example, explaining that distributive property allows us to multiply large numbers:

$$\begin{array}{r} 15 \\ \times 5 \\ \hline \end{array}$$

Point out that 15 is simply $10 + 5$ so we can solve this problem in the following way:

$$5 \times (10 + 5)$$

$$5 \times 10 + 5 \times 5$$

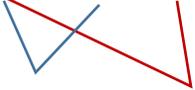
$$50 + 25 = 75$$

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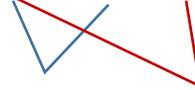
Lesson 1 Worksheet

Use distributive property to solve the following:

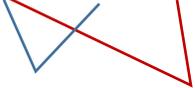
1. $3 \times (4 + 5) =$



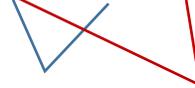
2. $5 \times (9 + 6) =$



3. $2 \times (7 + 1) =$



4. $4 \times (8 + 7) =$



5.
$$\begin{array}{r} 13 \\ \times 2 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 16 \\ \times 3 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 18 \\ \times 4 \\ \hline \end{array}$$

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Lesson 2: Halloween

Purchase [this](#) worksheet packet (or find a substitute) and ask your child to do one of the worksheets. Allow your child to color it when they are finished if they'd like to.

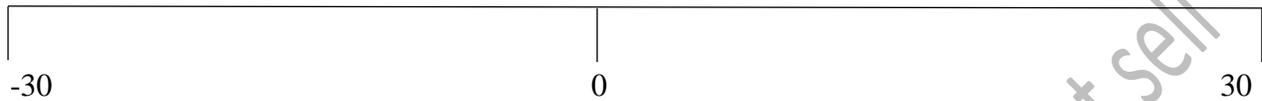
Lesson 3: Christmas

Purchase [this](#) math set (or find a substitute) and do one or more of the activities with your child.

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Lesson 4: Absolute Value

Placing numbers on a number line can help us compare their value. It can also help us find their absolute value. Absolute value is simply the distance on a number line between a given number and 0. For example, the absolute value of 30, is 30 because it is 30 spots away from the number 0 on the number line. Likewise, the absolute value of -30 is also 30 because it is also 30 spots away from 0 on the number line.



Absolute value can be written like this:

$|\text{number}|$

So, in this example, the equations for absolute value would be:

$$|30| = 30 \quad \text{and} \quad |-30| = 30$$

Practice the following with your child and then ask them to do the worksheet for this lesson.

$$|5| =$$

$$|-81| =$$

$$|34| =$$

$$|-65| =$$

Place the following numbers on the number line. Use absolute value to figure out who is in the most debt (owes the most money). Remember that loans are a negative amount of money, because it is money you owe, and should be placed on the negative side of the number line. Point out that, unlike with positive numbers, the negative numbers have a higher absolute value as they move left.

Sara took out a loan for \$20. Rachel took out \$50. Who has the most debt?



Lesson 4 Worksheet

Place the following numbers on the number line.

17, 12, 10, -23, -10, -13



Find the absolute values of the following numbers:

$|50| =$

$|-6| =$

$|94| =$

$|-101| =$

$|23| =$

$|-23| =$

$|44| =$

$|-150| =$

$|62| =$

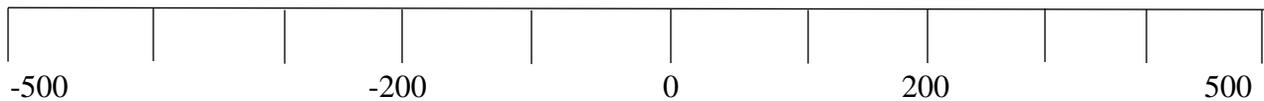
$|-62| =$

$|77| =$

$|-75| =$

Use absolute values and a number line to determine who has the most money and who has the most debt in the following problem:

Jon has \$500 in his bank account. Roger took out a \$200 loan to buy a car. Mary has \$250 in her bank account. Peter took out a \$500 loan. Who has the most money and who has the most debt?



Most money: _____

Most debt: _____

Lesson 5: Statistics Introduction

Watch this [video](#) with your child and answer any questions they may have about what statistics is

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Lesson 6: Mean, Median, Mode

Watch this [video](#) with your child and then ask them to do the worksheet below.

Mean: Average (add data numbers together and divide by the number of numbers)

Median: Middle number (put numbers in order and find the middle)

Mode: Most repeated number

Find the mean, median, and mode for each of the following data sets

5, 6, 4, 1, 2, 4

Mean _____

Median _____

Mode _____

31, 32, 45, 22, 32

Mean _____

Median _____

Mode _____

101, 105, 103, 102, 103

Mean _____

Median _____

Mode _____

Lesson 7: Valentine's Day

Purchase a small box or bag of candy hearts. Ask your child to sort these hearts by color and line them up. Then, ask your child to record the number of candies in each color category and find the mean, median, and mode of these numbers.

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Lesson 8: Range, Variance, Standard Deviation

Watch this [video](#) with your child and ask them to do the following worksheet

Range: Distance on between the biggest number in a data set and the smallest number in that data set (biggest number minus smallest number)

Variance: Distance of numbers in a data set from their mean (difference between each data number and the mean, squared, divided by the number of data points). Represented by σ^2

Standard Deviation: Measurement of variation between the numbers in a data set (Square root of the variants). Represented by $\sqrt{\sigma}$

Find the range, variance, and standard deviation of each of the data sets

5, 6, 4, 1, 2, 4

Range _____ Variance _____ Standard Deviation _____

-10, 3, 9, -5, -5

Range _____ Variance _____ Standard Deviation _____

3, 2, -1, 3, -4

Range _____ Variance _____ Standard Deviation _____

Lesson 9: Histograms

Watch this [video](#) with your child and ask them to create a histogram of the following data set:

Age of people in a store: 30, 34, 29, 15, 5, 55, 60, 54, 1, 13, 23, 54, 60, 87, 26, 12, 2, 5, 7, 8, 19, 18, 52, 65

Bucket	Number

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Lesson 10: Dot Plots

Watch this [video](#) with your child and answer any questions they may have. Then, ask them to create a dot plot with the following data set and answer the questions.

Ages of people on an airplane: 16, 22, 18, 5, 2, 45, 66, 18, 3, 9, 2, 16, 22, 16, 5, 45, 5, 5

Age	Number

What is the age range of passengers on this flight in years? _____

How many people on this flight are under 18 years old? _____

How many people on this flight are 5 years old? _____

Lesson 11: Box Plot

Watch this [video](#) with your child. Answer any questions they may have. Then, help them create a box plot with the following data set.

A teacher collects data on how far each child in her class walks to school. She wants to know the spread and median of this data. Create a box plot to show her work.

Distances in miles: 2, 5, 1, 3, 1, 2, 2, 2

First, put the numbers in order: _____

Then, find the median of the data plot in miles: _____

Next, find the median of the bottom numbers (left of median): _____

Finally, find the median of the top numbers (right of the median): _____

Create your box plot:

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Lesson 12: Clusters, Gaps, Peaks, and Outliers

Watch this [video](#) with your child.

Ask your child to take a survey of 20 people, gathering their age. Then, ask your child to plot this data on the most appropriate graph/plot for the data they collected. Finally, ask your child to identify any clusters, gaps, peaks, and/or outliers for their data set and identify an overall pattern (most people are in this age range) for their data. Use the space below to complete the assignment.

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Lesson 13: St. Patrick's Day

Purchase this [worksheet set](#) (or find a substitute) and allow your child to work through and color on or more worksheets

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Lesson 14: Equivalent Expressions and Finding a Variable

Show your child the following equation:

$$a + 15 = 13 + 5$$

Point out that these equations have an = between them, meaning that each side of the equation is equal to the other. Work through the problem to solve for a

$$a + 15 = 13 + 5$$

Complete known equation (we know 13 is added to 5 because the problem tells us this information)

$$a + 15 = 18$$

$$-15 \quad -15$$

Cancel out numbers beside the variable by performing the opposite operation of the one asked for. Repeat this on the opposite side of the equal sign to keep the equation equal

$$a + 0 = 3$$



$$a = 3$$

Any number plus 0 is itself

So, in order for this expression to be true, a must equal 3.

Next, work through the following with your child.

$$c - 25 = 30 - 23$$

If $c = 33$, is the equation true?

$$c - 25 = 30 - 23$$

Complete known equation (we know 13 is added to 5 because the problem tells us this information)

$$c - 25 = 7$$

Put given number in place of variable

$$33 - 25 = 7$$



$$8 = 7$$

Solve known equation

Eight is not equal to 7, so our answer would be that this equation is not true. We could write this with a *does not equal* sign in the following way:

$$8 \neq 7 \text{ or } c - 25 \neq 30 - 23$$

Do the following worksheet to determine if each equation is equal with the given amount for each variable.

Lesson 14 Worksheet

1. $6 + (8 \cdot 9) = 8b + 3 + 3$

If $b = 9$

2. $13 - (2 \cdot 3) = 14 - d$

If $d = 7$

Is this equation equal? Yes No

Is this equation equal? Yes No

3. $101 + (9 \div 3) = a + 100 + 2$

If $a = 5$

4. $56 - (8 \cdot 9) = 14 - d$

If $d = -30$

Is this equation equal? Yes No

Is this equation equal? Yes No

5. $5 + (5 \cdot 5) = 5b + 5$

If $b = 5$

6. $81 - (9 \cdot 3) = 64 - d$

If $d = 9$

Is this equation equal? Yes No

Is this equation equal? Yes No

Lesson 15: Equation Inequalities, Word Problems, and Finding the Variable

Review the previous lesson with your child. Remind them that not all equations are true. Point out that, at times, we must change the variable to create an equal expression. Work through the following examples with your child. Then, ask them to do the worksheet for this lesson.

Find a

$$a + 30 = 25 + 5$$

Complete known equation

$$a + 30 = 30$$

-30 -30

Cancel out numbers beside the variable by performing the opposite operation of the one asked for. Repeat this on the opposite side of the equal sign to keep the equation equal

$$a + 0 = 0$$



$$a = 0$$

Any number plus 0 is itself

Determine if the following equations are represented by =, >, or < if b = 10

$$6b + 24 \quad \bigcirc \quad 50 + 4$$

Plug in given amount for variable (b = 10)

$$6 \cdot 10 + 24 \quad \bigcirc \quad 50 + 4$$



Complete known equations

$$60 + 24 \quad \bigcirc \quad 54$$

$$84 \quad \bigcirc \quad 54$$

>

Determine which sign makes the equation true (=, >, or <)

Help your child through the next example. Then, ask them to do the worksheet for this lesson

What number would b have to equal to make the following statement true:

$$6b + 24 = 50 + 4$$

Complete known equation

$$6b + 24 = 54$$

-24 -24

$$6b + 0 = 30$$

$$\underline{6b} = \underline{30}$$

$$6 = 6$$

$$b = 5$$

Cancel out numbers beside the variable by performing the opposite operation of the one asked for. Repeat this on the opposite side of the equal sign to keep the equation equal. For this problem, you must subtract, then divide

Lesson 15 Worksheet

Complete the following equations with the correct sign ($=$, $<$, $>$). Then, find the variable that would make the equations equivalent.

1. $9c + 12$ $93 - 5$
If $c = 9$

2. $5d + 30$ $60 - 5$
If $d = 4$

3. $2a + 101$ $150 - 30$
If $a = 9$

4. $3b + 36$ $36 + 21$
If $b = 45$

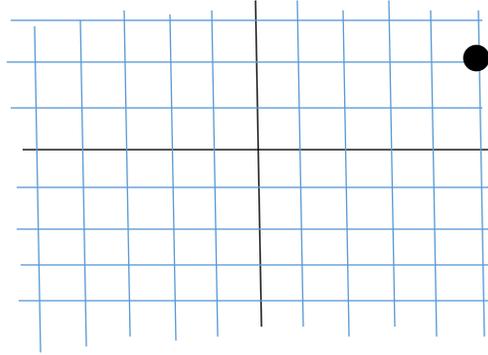
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Lesson 16: Drawing Polygons in a Coordinate Plane

You will need graphing paper for this lesson.

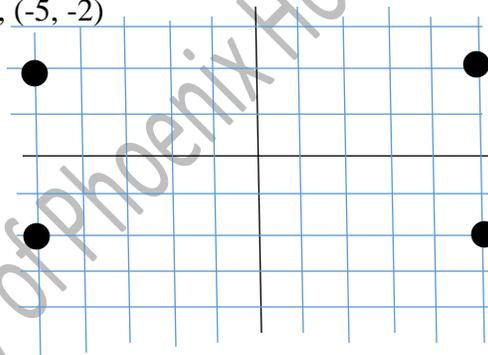
Review with your child the process of graphing coordinates on a plane. Use the following example.

$(5, 2)$



Next, explain that we can plot different polygons on a plane, too. We just use a set of coordinates and then draw a line between them. Work through the following example with your child.

$(5, 2), (-5, 2), (5, -2), (-5, -2)$



Ask your child to draw lines from coordinate to coordinate to form a polygon. Then, ask your child to name the polygon they've created. Finally, ask your child do the worksheet for this lesson using a graphing paper for each coordinate set.

Lesson 16 Worksheet

Graph the following coordinate sets (one set per plane) and name the polygon each one makes.

(6, 0), (2, 4), (-6, 0), (-2, 4)

Polygon Name: _____

(3, 0), (0, 0), (0, 3), (3, 3)

Polygon Name: _____

(2, 2), (6, 2), (5, 4)

Polygon Name: _____

(7, 3), (7, -3), (-7, 3), (-7, -3)

Polygon Name: _____

(1, 0), (-1, 0), (3, 4), (0, 7), (-3, 4)

Polygon Name: _____

(4, -1), (-3, 7), (11, 7)

Polygon Name: _____

Lesson 17: Three-Dimensional Figures Using Nets – Introduction

Watch this [video](#) with your child and answer any questions they may have.

Find an empty container you have in your home that is a rectangular prism (cereal box, stuffing box, butter box, picture frame, etc). Ask your child the following questions about this rectangular prism:

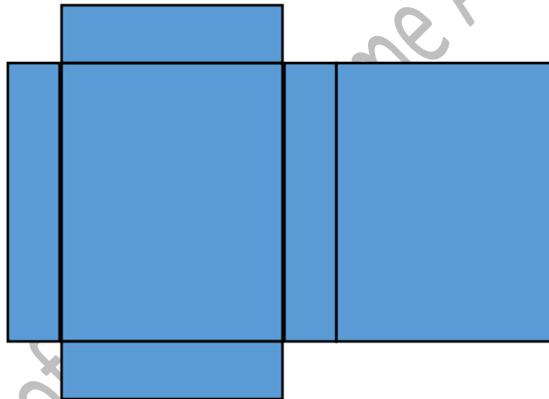
How many bases are there?

Are the bases congruent?

What shape are the bases?

Next, ask your child to cut down the folds in the box to separate each lateral face. They should end up with a top, bottom, left side, right side, front, and back piece, all separated. Then, review the three questions, making corrections as needed. Place the congruent parts of the box together in a pile.

Finally, ask your child place each of these pieces together like a puzzle, creating the net of that rectangular prism. The net should look like the box was simply unfolded and laid flat. It should look something like this:



Next, use a 3D shape set like the one found [here](#) to explore the nets for different 3D shapes. Ask your child the following questions for each shape as you work:

How many bases are there?

Are the bases congruent? If so, which ones?

What shape(s) are the bases?

Keep all the materials from this lesson for use in the next lesson.

Lesson 18: Three-Dimensional Figures Using Nets – Surface Area

Review the lesson from yesterday with your child, correcting and answering questions as you go. Then, ask your child to lay out the net of their rectangular prism again. Using a ruler and a piece of blank paper, ask your child to make a list of each base that looks something like this:

Top

Bottom

Left side

Right side

Front

Back

Then, ask your child to measure the length, height, and/or width of each base in inches. For example:

Top: 2 x 10 inches

Bottom: 2 x 10 inches

Left Side: 4 x 10 inches

Right Side: 4 x 10 inches

Front: 6 x 10 inches

Back: 6 x 10 inches

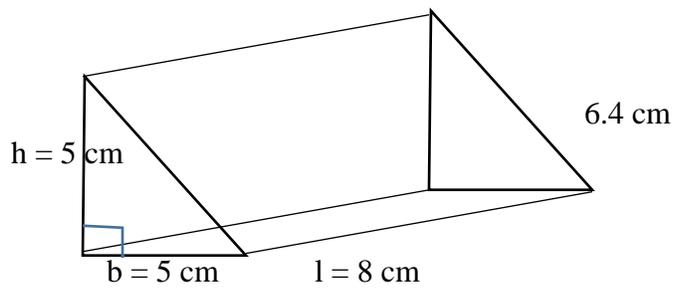
Tell your child that today, we are going to find the surface area of this rectangular prism using the net. Explain that surface area is simply the total amount of space that all the surfaces of an object take up.

To find the surface area, we can simply find the area of each piece of the net individually and add them together, like this:

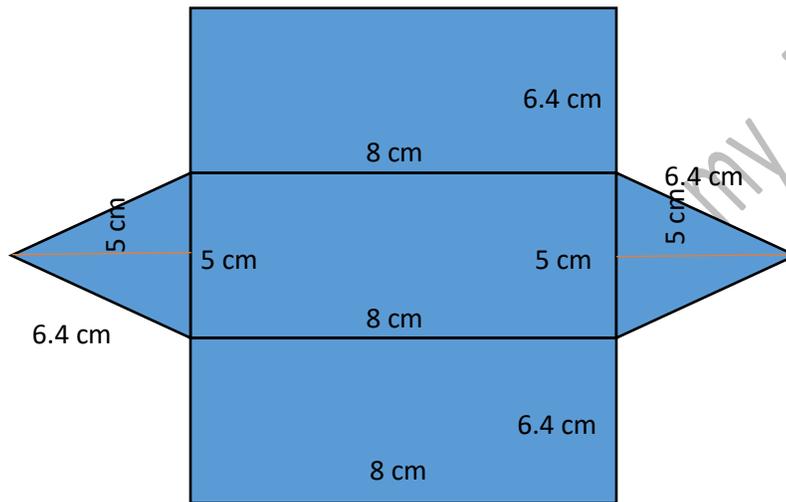
$$(2 \cdot 10) + (2 \cdot 10) + (4 \cdot 10) + (4 \cdot 10) + (6 \cdot 10) + (6 \cdot 10) = 240 \text{ inches}$$

Work out this problem using both methods with your child. Point out that you get the same answer both ways, but that the formula has fewer steps and is usually going to be faster. Explain that this formula works only nets that have rectangles (including square).

Then, work through the following example of finding the surface area for a triangular prism net:



Ask your child to name the bases for this shape, draw a net and point out which bases are congruent. It should look something like this:



Next, ask your child to add the dimension shown in image 1 to their drawing, matching each measurement to the correct base. Point out that we can simply find the area of each individual base and add them together, like with the rectangular prism:

area of a rectangle = $b \cdot h$

area of a triangle = $\frac{1}{2}bh$

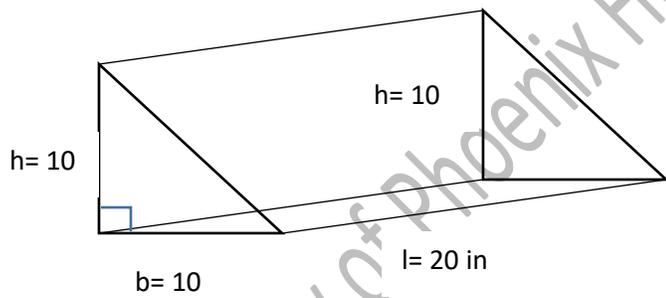
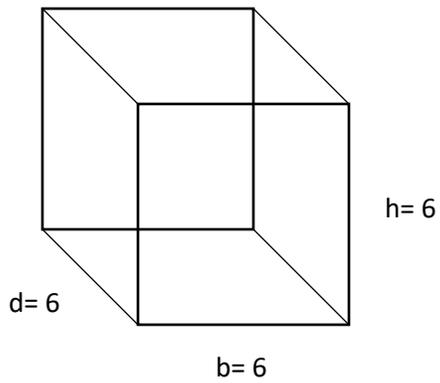
$$(5 \cdot 8) + (5 \cdot 8) + (5 \cdot 8) + \frac{1}{2}(5 \cdot 5) + \frac{1}{2}(5 \cdot 5) = 145 \text{ cm}$$

Finally, ask your child to do the worksheet for this lesson

Additional information can be found [here](#) and [here](#)

Worksheet Lesson 18

Using a net, find the surface area of the following shapes:



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Lesson 19: Review

Do the following review problems:

1. Solve using distributive property: $2 \cdot (3 + 6) =$

2. Find the absolute value of -21, 33, 45, and -101

3. Find the mean, median, mode, range, and standard deviation of the following data set: 101, 105, 98, 56, 105, 103, 102, 101, 101, 56

4. Graph the above data set using a histogram, box plot, or dot plot given that these are ages of men living in a certain neighborhood and we want to find the range and median

5. Are there any outliers for this data set?

6. Solve the equation for $a = 7$. Then, find the value for a if the equation is equal

$a + (3 \cdot 3) \bigcirc 54 - 39$