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3/29/2021

Student Learning Analysis

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My student teaching placement is in a 5th-grade virtual class. Even though I am a social studies major and love history, I thought it would be easier to assess and adapt a lesson plan in math. I chose to do it on division because that was the new unit we were starting on.

The assessment is clearly aligned with specific learning goals and state standards

The standard covered was 5.NBT.B.6 which says

Student	Cumulative Score
Mastered	
field, Elyse R	80%
is, Yiliana G	90%
s, Owen M	100%
a, Julian Z	90%
ens, Delano L	80%
, Shanelle E	80%
i, Autumn R	80%
al, Gavin L	80%
il, Mina	100%
, Caitlyn	80%
idze, Matthew M	90%
eri, Sebastian C	80%
enson, Justin M	100%
ms, Jordyn C	80%
ewskil, Chester R	80%
ob, Carolin D	80%
Bonnie	80%
Not Mastered	
on-McDonald, Jo/Ziah Z	0%
a, Brooklynn M	70%
, McKenna C	70%
ard, Olivia E	80%
il, Juliet	70%
i, James	50%
n, Quinton A	40%
iz, Miles H	50%
a, Landi L	80%
ver, Danny D	50%
rk, Joseph T	0%
...

"Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models." (Michigan Math Standards)

The pretest I chose to give out to the students came from the online version of the book. Since I am virtual, it is the way my mentor teacher and I have decided to give assessments. This came from a program called Think

Figure 1: Pre-test Results

Central, and I gave them Unit 5 Quick Quiz 1. I gave to them a quick quiz on think central even though they could not show their work. The program gives different numbers for each child, and you can see a sample of the pretest in the appendix at the end of the paper.

The assessment produced information useful for conducting a substantive analysis of student understanding

The quick quiz is automatically scored, and I used those to guide my instruction. The short quiz was five questions, and since it came from the book's websites, it was aligned to the standard 5.NBT.B.6. As you can see, the program already divides the students into mastered and not mastered sections. This showed me who needed help and who did not. I decided to help the students who scored 60% or lower. Joseph is special education and does not come to math with us, but he still tries. Jo'Ziah just finished it on Friday, 3-18-2021, after the unit was done and we started the next unit. So, I did not have the data in time for analysis. I helped these five students Cassandra (Cassy), Danny, Quinton, Miles, and James, because they scored below the 60% mark.

The strategies I will be using are reteaching the box, partial quotient and standard algorithms through videos, and practice problems. You are limited in what you can use online to keep them engaged and learning. I will use practicing problems by these three methods because in math usually the more a child practices, the better they get. When we show videos, we typically go through without stopping, and in the small group, I realized I need to stop the video and explain and practice the problems.

Analysis of assessment data produced insights into student thinking. Student feedback was informed by this analysis.

Of the five students who scored a 60% or lower, everyone got #5 wrong. So I decided to focus on #5. Here are the problems from each of the student's pretests accompanied by their work shown.

Correct Response	A sports store owner has 2928 basketballs he wants to donate to youth leagues. There are 84 leagues. If each league gets the same number of basketballs, how many basketballs will each league get? How many basketballs will be left over? Each league will get <input type="text" value="34"/> basketballs and <input type="text" value="72"/> basketballs will be left over.
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Figure 2: Cassandra Test

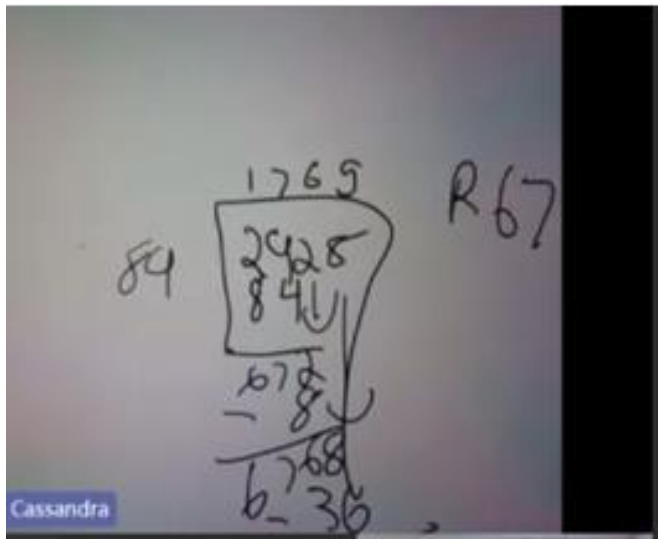


Figure 3: Cassandra work

First, we have Cassy's work. The first mistake she made was thinking that 84 can go into 2 one time. She told me that she felt she could divide a smaller number from a bigger number. If you make one mistake in math, usually the whole problem is wrong, which happened here, but at least she knew to bring down the

two and eight after you subtracted. She also needs to work on her subtraction because that is

also a problem. The plan for her would be to make sure she knows that you cannot divide a smaller number from a bigger number and use a standard algorithm.

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Correct Response A sports store owner has 3134 basketballs he wants to donate to youth leagues. There are 85 leagues.

If each league gets the same number of basketballs, how many basketballs will each league get? How many basketballs will be left over?

Each league will get basketballs and basketballs will be left over.

Figure 4: James Test

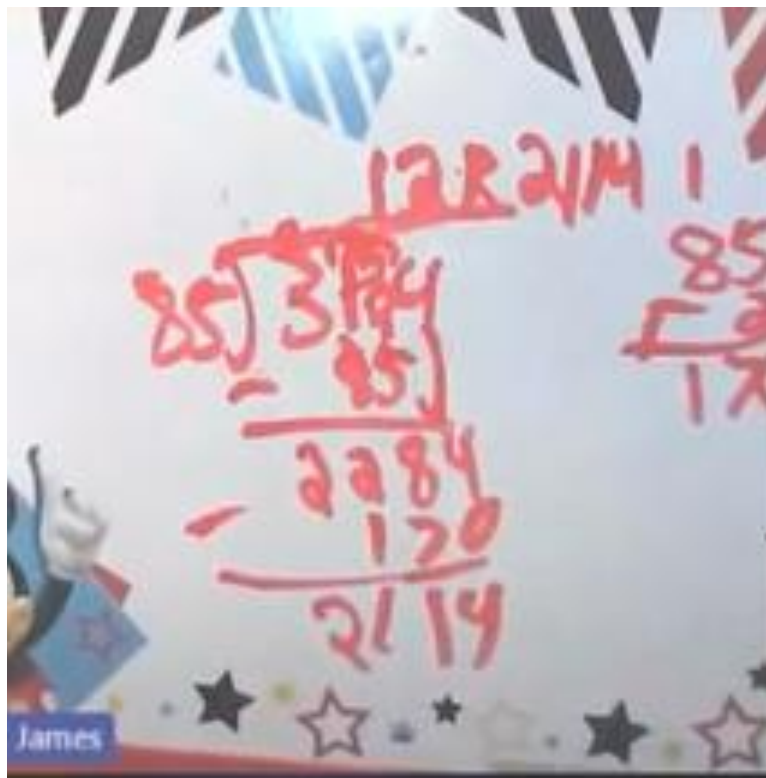


Figure 5: James's work

Next, we have James's work: as we can see, he started the question right, but 85 can go into 3134 more than once, so this is a multiplication error. Same as Cassy. Then he brings down the four which you are supposed to do; then he again multiplies wrong. Since this a second student struggles with multiplication, I could show the students in this

small group to round the number, so it ends in a 0 or a five and count up—more on this explanation below. As a result of multiplying wrong, he gets the wrong remainder.



Correct Response

A sports store owner has 2681 basketballs he wants to donate to youth leagues. There are 84 leagues.

If each league gets the same number of basketballs, how many basketballs will each league get? How many basketballs will be left over?

Each league will get basketballs and basketballs will be left over.

Figure 6: Miles's Test

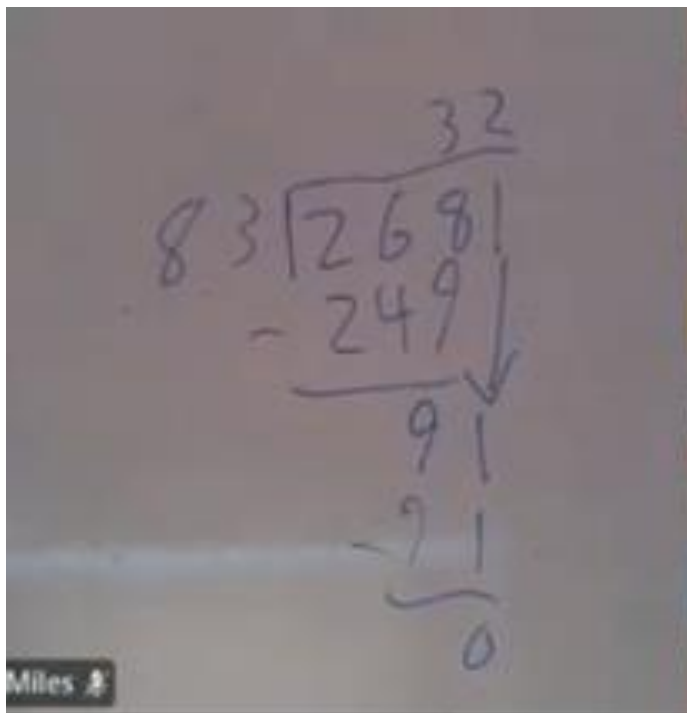


Figure 7: Miles's Work

As you can see from Miles's work, the only thing we need to work on here is his multiplication facts, so like James and Cassy, I need to teach him how to round to the nearest number ending in 0 or a 5. But if he knew that 83×2 was 166, he would have gotten one and got the correct answer.

Correct Response	<p>A sports store owner has 4103 basketballs he wants to donate to youth leagues. There are 84 leagues.</p> <p>If each league gets the same number of basketballs, how many basketballs will each league get? How many basketballs will be left over?</p> <p>Each league will get <input type="text" value="48"/> basketballs and <input type="text" value="71"/> basketballs will be left over.</p>
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Figure 8: Quinton Test

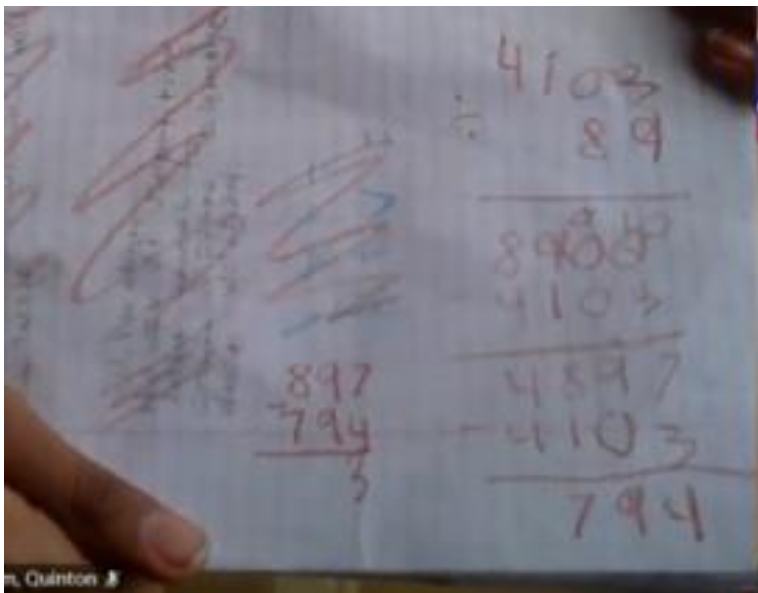


Figure 9: Quinton Work

Quinton has done something completely different. First, he wrote the numbers wrong. He wrote the divisors and the right dividend. Next, he multiplied by 100 to make 89 into 8900; then, he subtracted 4103. I think he did this because he felt he could do repeated subtraction to get the

answer and gave up only two times of subtracting. I can see where he was going. I told him he was on the right track but that the method would only work for smaller numbers, like a double-digit by a single digit. I then gave him the example of $12/4$ and showed him how you could remove four three times from 12. I also told him that he needs to pay attention and that he needs to write the numbers correctly.

Correct Response	<p>A sports store owner has 3475 basketballs he wants to donate to youth leagues. There are 83 leagues.</p> <p>If each league gets the same number of basketballs, how many basketballs will each league get? How many basketballs will be left over?</p> <p>Each league will get <input type="text" value="41"/> basketballs and <input type="text" value="72"/> basketballs will be left over.</p>
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Figure 10: Danny's Test

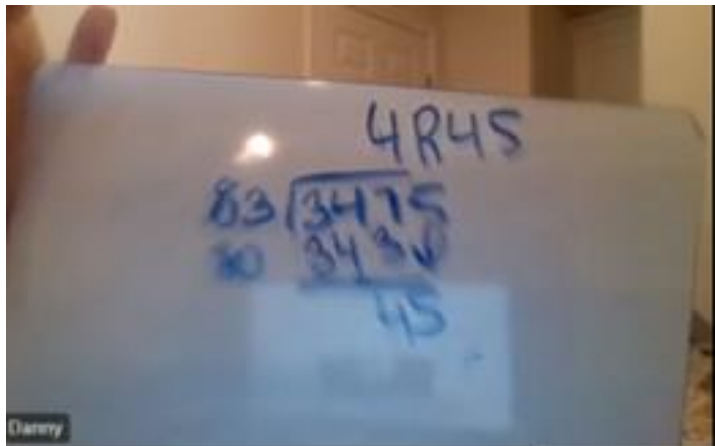


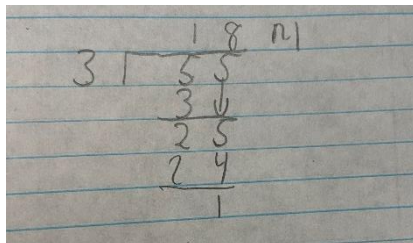
Figure 11: Danny's work

Lastly, you can see from Danny's work that he already knows that he needs to round down and find the multiples of 80 and find how many times that goes into 347. He said— four which is correct— but as you can see, he probably got frustrated and just

guessed at the number instead of doing 83×4 and getting 332. For him, he needs more practice and needs to do his multiplication and not skip that step.

Subsequent instruction is informed by the analysis of student thinking

I worked with them as a group, so I planned for all their needs, so I started with a review of fundamental division with all of them, once I knew they had a handle on basic division. As you



can see in the picture, to the left is the type of problem I would give to these five students to practice division. I

assessed that they got the basic division down because I gave them problems and had them solve, and once everyone got it is when I moved on.

After doing all that fundamental division, I got to the standard and showed them the box method through [this video](#), and we stopped and took notes and did the problems as practice. Since these were two-digit numbers and Danny was the only one who knew that he had to round, I had him explain how you round up or down to a friendly number and count up from that number until you get close to the number you want to get to. That is as far as he got to. Then I explained that you need to try it with the divisor after you do that, so as an example I wrote down 24×5 and 24×6 . I told them that they needed to check that number and one higher just in case the one higher is closer to the dividend. We practiced a few problems with the box method then we moved on to the following division method.

The next step is to show them how to do partial quotients. I showed them these through two

$$\begin{array}{r} 35 \overline{) 492} \\ \underline{70} \\ 192 \\ \underline{140} \\ 52 \\ \underline{49} \\ 3 \end{array}$$

videos. [The first one is linked here](#). After learning that method, we watched [this next video](#) and they did the problems by themselves to see if they understood the concept. Before we did any practice from the video, I showed them my way: the only

difference is the number is on the sides, and for the Khan Academy videos, they put the numbers on the top. I told them does not matter which way you did them as long as you get the correct answer in the end.

Since I already showed them how to do the standard algorithm, we only did a few practice problems, and we did the practice problems from [this video](#).

At every step, these five students took notes and were engaged with the math problems and lessons that I put together to help them learn division. This group consisted of the high, medium, and low students in math. It shows me that everyone needs help. I hope this shows me that I can ask for help, and it would not be a problem like I have thought.

As you can see from the post-test in the next section, these five students I worked with, learned and retained a lot of information from these small group sessions. Since I had pictures of their pretest problem, I showed them theirs, and they could point out the mistakes they made in the problems and had fun comparing what they did wrong.

Additional assessment information was produced to determine student growth.

After all this learning, I had to assess how they did. So, I assigned another think central quick quiz with similar problems. Sadly I could not get a similar question on the post-test, but I did get

m, James	100%
m, Quinton A	100%
utz, Miles H	80%
cker, Danny D	100%
Cassandra M	100%

the standard 5.NBT.B.6 in the post-test. Here are the test results and the problem that I chose to compare their growth too.



Correct Response	<p>Solve. Express the remainder as a whole number.</p> $\begin{array}{r} \boxed{12} \text{ R } \boxed{8} \\ 55 \overline{) 668} \end{array}$
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Figure 12: Post-

$$\begin{array}{r}
 16 \text{ R}3 \\
 55 \overline{) 883} \\
 \underline{880} \\
 3
 \end{array}$$

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Correct Response Solve. Express the remainder as a whole number.

R

55) 883

$$\begin{array}{r}
 16 \text{ R}3 \\
 55 \overline{) 883} \\
 \underline{880} \\
 3
 \end{array}$$

Personal Math Trainer HMH

Correct Response Solve. Express the remainder as a whole number.

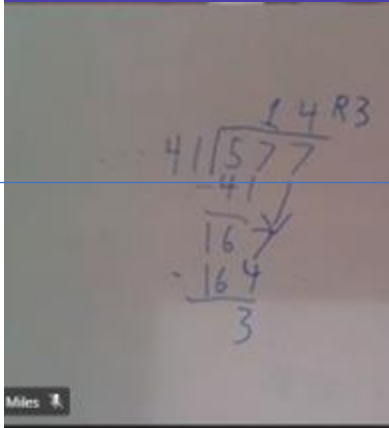
R

41) 577

Correct Response

Solve. Express the remainder as a whole number.

$$\begin{array}{r} \boxed{12} \text{ R } \boxed{5} \\ 41 \overline{) 497} \end{array}$$

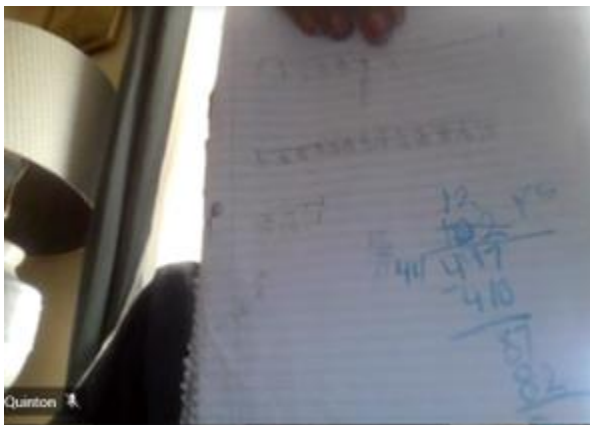


Miles ↕

Correct Response

Solve. Express the remainder as a whole number.

$$\begin{array}{r} \boxed{12} \text{ R } \boxed{5} \\ 41 \overline{) 497} \end{array}$$



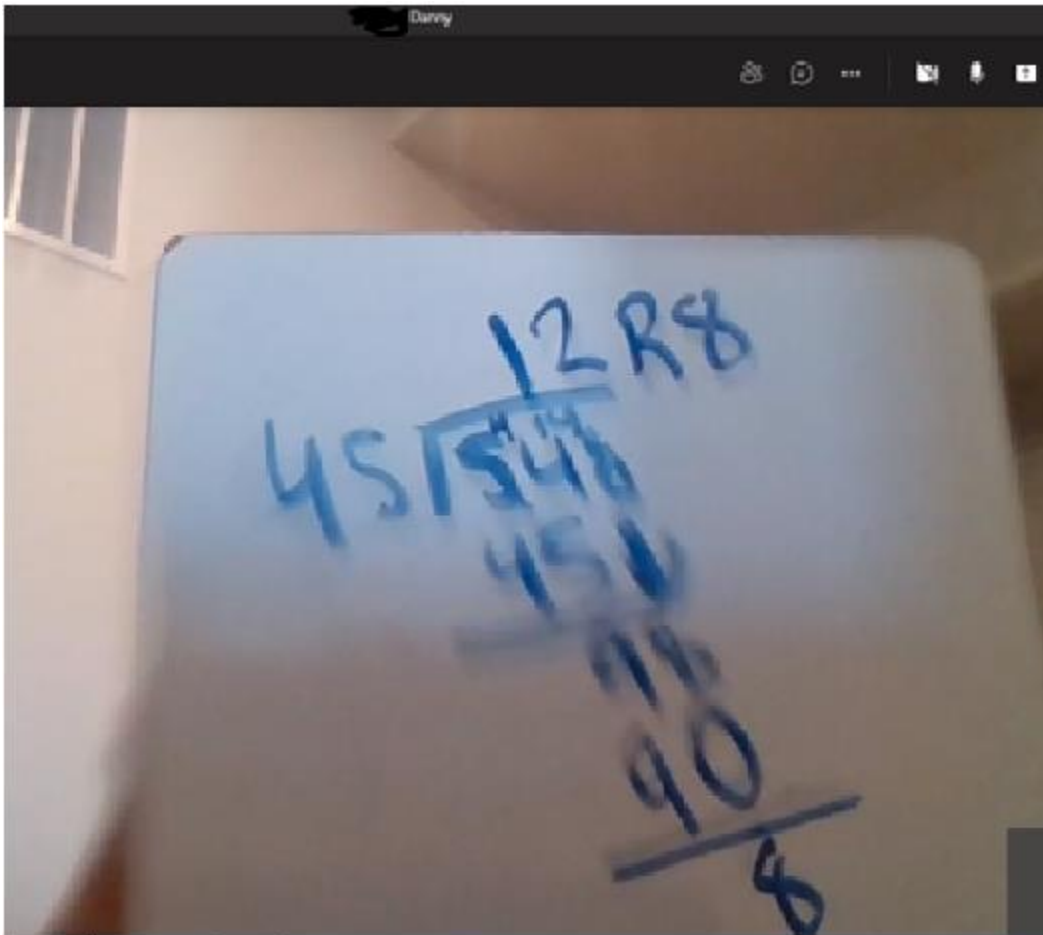
Quinton ↕



Correct Response

Solve. Express the remainder as a whole number.

$$\begin{array}{r} \boxed{12} \text{ R } \boxed{8} \\ 45 \overline{) 548} \end{array}$$



As I hope you can see from the five students, they know how to divide two digit divisors and three digit dividends.


Conclusion


I took five students who did not do well on the pretest and in a few weeks had them take a post-test that all but one got 100% on. This shows that with a bit of extra help, everyone can succeed; it does not matter what kind of student you are, everyone needs help.

When you take a test online, the results are flawed because students can cheat in many ways; they can use a calculator or use the internet to find the answer. When they have their cameras off, they could have a family member helping them or taking the test for them. What I am saying is there is no validity to tests because students can cheat in many ways. Even though I challenge the validity of the test, I understand the process of collecting and analyzing data; there is no way that these test results that are shown are accurate in any way for the reason I listed above.

I have to say that gathering data and analyzing it for students' benefit is a necessary process. Like one of my professors, told me, if a test is not valid, don't give it. She was a new fourth-grade teacher and did the beginning of the book, which was basic adding, subtracting, dividing, and multiplying. The kids breezed through, but as soon as she got to the new material, the grades tanked, and her students were poorly performing; as a result, she did not get through any of the topics in math she needed to that year. She told us that if she gave them a pretest, she could have skipped the beginning sections. This is where the SLA popped out for me as something I should do in my classroom when I get there to not end up in that professor's shoes.


Appendix

 **Personal Math Trainer** Unit 5 Big Idea 1 Qui



Divide. Express any remainder as a whole number.

R
6 $\overline{) 5,143}$



Divide.

R
65 $\overline{) 5,061}$



1

2

3

4

5



Enter an equation. Then solve.

The workers at a company packaged 7,024 juice boxes into packs of 8.

How many packs are there?

Let n represent the number of packs. Complete the equation.

$$n = \boxed{} \div \boxed{}$$

Solve.

There are packs.



1

2

3

4

5



Solve.

Sydney puts her coin collection into an album. She has 351 coins.

If each page holds 15 coins, how many pages does Sydney need?

Sydney needs pages.



1

2

3

4

5



A sports store owner has 3,344 basketballs he wants to donate to youth leagues. There are 86 leagues.

If each league gets the same number of basketballs, how many basketballs will each league get? How many basketballs will be left over?

Each league will get basketballs and basketballs will be left over.