

PSSA, Grade 5 Math

Spools of Ribbon

Handscoring Anchor Set

PSSA Math: Spools of Ribbon, Grade 5

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1		
2		

PSSA Math: Spools of Ribbon, Grade 5

78. **Continued.** Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B.** Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

PSSA Math: Spools of Ribbon, Grade 5

Grade 5 Math Spools of Ribbon

Assessment Anchor this item will be reported under:

M05.A-F.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Specific Anchor Descriptor addressed by this item:

M05.A-F.2.1 Solve multiplication and division problems involving fractions and whole numbers (straight computation or word problems).

Scoring Guide:

Score	In this item, the student –
4	Demonstrates a thorough understanding of how to apply and extend previous understandings of multiplication and division to multiply and divide fractions by correctly solving problems and clearly explaining procedures.
3	Demonstrates a general understanding of how to apply and extend previous understandings of multiplication and division to multiply and divide fractions by correctly solving problems and clearly explaining procedures with only minor errors or omissions.
2	Demonstrates a partial understanding of how to apply and extend previous understandings of multiplication and division to multiply and divide fractions by correctly performing a significant portion of the required task.
1	Demonstrates minimal understanding of how to apply and extend previous understandings of multiplication and division to multiply and divide fractions.
0	The response has no correct answer and insufficient evidence to demonstrate any understanding of the mathematical concepts and procedures as required by the task. Response may show only information copied from the question.
Non-scorables	B – Blank, entirely erased or written refusal to respond F – Foreign Language K – Off-task U – Unreadable

Top Scoring Student Response And Training Notes:

Score	Description
4	Student earns 4 points.
3	Student earns 3.0 – 3.5 points.
2	Student earns 2.0 – 2.5 points.
1	Student earns 0.5 - 1.5 points. OR Student demonstrates minimal understanding of how to apply and extend previous understandings of multiplication and division to multiply and divide fractions.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

PSSA Math: Spools of Ribbon, Grade 5

A.

What?			Why?
Spools of Ribbon			Sample Work: $46 \div 5 = 9\frac{1}{5}$ $19 \div 5 = 3\frac{4}{5}$ OR Sample Explanation: Divide 46 by 5 to find the number of pieces on spool 1. There are 9 pieces that are 5 feet long, with 1 foot of a 5-foot-long piece remaining, which is $\frac{1}{5}$. Divide 19 by 5 to find the number of pieces on spool 2. There are 3 pieces that are 5 feet long, with 4 feet of a 5-foot-long piece remaining, which is $\frac{4}{5}$.
Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining	
1	9	$\frac{1}{5}$	
2	3	$\frac{4}{5}$	

(2½ score points)

½ point for each correct answer

½ point for complete support

B.

What?	Why?
2 (feet)	Sample Explanation: For 27 feet, Zoe could cut 5 pieces with 2 feet remaining since $27 \div 5 = 5\frac{2}{5}$. For the next 5 additional feet, there would be 32 feet. Zoe could cut 6 pieces with 2 feet remaining since $32 \div 5 = 6\frac{2}{5}$. For the next 5 additional feet, there would be 37 feet. Zoe could cut 7 pieces with 2 feet remaining since $37 \div 5 = 7\frac{2}{5}$. As the numerator (total number of feet) keeps increasing by 5, the denominator (length of each piece) stays the same at 5. Every increase of 5 increases the number of pieces by 1, but doesn't change the fractional amount remaining. So the answer will always be a mixed number with $\frac{2}{5}$ representing the fractional part. Since $\frac{2}{5}$ represents the fraction of each 5-foot-long piece, the amount remaining will always be 2 feet as the length of ribbon on the spool increases by 5 feet.

(1½ score points)

½ point for correct answer

1 point for correct and complete explanation

OR ½ point for correct but incomplete explanation

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

$$\begin{array}{r}
 09 \text{ r } 1 \\
 \underline{5146} \\
 -0 \\
 \hline
 46 \\
 -45 \\
 \hline
 1
 \end{array}
 \qquad
 \begin{array}{r}
 03 \text{ r } 4 \\
 \underline{5119} \\
 -0 \\
 \hline
 19 \\
 -15 \\
 \hline
 4
 \end{array}$$

4 A. 2.5 points – all four correct answers and complete support. Support can be shown by work or by explanation, but must include reference to the remainders.

B. 1.5 points – correct answer (2) and complete explanation. Note that there is no support required for the number of feet remaining.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

Since Zoe has at least 27 feet of ribbon on the third spool, and she is adding 5 feet to it. That makes 32 feet. If you \div 32 by 5 you get 6 r2. If you \div 27 by 5 you get 5 r2, so you still get the same remainder each time. But with 32 feet of ribbon, you get more out of it, so there will be 2 feet remaining.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1; 46 feet
- spool 2; 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9, 5 foot pieces	$\frac{1}{5}$ of a 5 ft piece
2	3, 5 foot pieces	$\frac{4}{5}$ of a 5 ft piece

Spool 1: $46 \div 5 = 9 \text{ R}1$ so $\frac{1}{5}$ of a 5 ft piece
 Spool 2: $19 \div 5 = 3 \text{ R}4$ so $\frac{4}{5}$ of a 5 ft piece

4

- A. 2.5 points – all four correct answers and complete support.
 B. 1.5 points – correct answer (2) and complete explanation.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

For every additional 5 ft of ribbon
she can take off 1 additional
5 ft long piece because if
there is 32 ft of ribbon (5 more ft)
she can take off 5 ft and
have 27. She can do that because
if there are 5 ft more and
she takes away 5 ft it will
be the same thing.
There would be 2 feet of
of extra ribbon because $27 \div 5 = 5R2$
So there would be 2 feet left.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

800
1 leftover

4 feet
left
over

$$46 \div 5 = 9 \text{ R } 1 = \frac{1}{5}$$

$$9 \times 5 = 45$$

$$19 \div 5 = 3 \text{ R } 4 = \frac{4}{5}$$

3 A. 2 points – all four correct answers only. There is no credit given for support because of the run-on equation (“ $46 \div 5 = 9.2 = \frac{1}{5}$ ”).

B. 1.5 points – correct answer (2) and complete explanation.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

Zoe will always have an extra
2. I know this because if he goes
up by five every time 27, 32, 37.
I will always be like that and the same.

(5 fives extra 2) (6 fives extra 2) (7 fives extra 2)

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

$$46 \div 5 = 9R1$$

$$19 \div 5 = 3R4$$

3

A. 2.5 points – all four correct answers and complete support.

B. 1 point – correct answer (2) and correct but incomplete explanation. The work is correct and shows some understanding, but *explanation* of “why” is lacking.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

$$\begin{array}{l} 27 \div 5 = 5 \text{ R } 2 \\ 32 \div 5 = 6 \text{ R } 2 \\ 37 \div 5 = 7 \text{ R } 2 \end{array}$$

$$27 + 5 = 32$$

$$32 + 5 = 37$$

There will always be a remainder of two feet.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet $9\frac{2}{10}$
- spool 2: 19 feet $3\frac{8}{10}$

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{2}{10}$
2	3	$\frac{8}{10}$

The way I got 9 five-foot-long pieces and 3 five-foot-long pieces of ribbon was by first seeing that spool 1 was 46 feet long. This means I have to divide it by five because I'm trying to find out how many five-foot-long pieces of ribbon I can get out of the spool. While dividing on the calculator I got 9.2 at the end of 9 and since it was in the tenths place I converted it into $\frac{2}{10}$. This was also how I got $\frac{8}{10}$ for the remaining piece of spool 2. The way I got 3 five-foot-long pieces of ribbon for spool 2 was also dividing it by 5 (for the same reason) and got 3 five-foot-long pieces of ribbon with a decimal number (0.8) which I converted into $\frac{8}{10}$ a five-foot-long piece of ribbon.

3 A. 2.5 points – all four correct answers and complete support. Note that equivalent fractions for “ $\frac{1}{5}$ ” and “ $\frac{4}{5}$ ” are acceptable.

B. .5 point – correct answer (2), incorrect explanation. “Counting down” from 27 by fives does not answer the question, but credit can be given for the answer if it leads to “2 feet remaining”.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining. The reason why for every additional 5 ft of ribbon on the spool Zoe can cut an additional five feet of ribbon and will have the same amount of ribbon left is because Zoe's spool (spool 3) has 27 feet of ribbon (odd number) which means if you cut off 5 feet of ribbon you will eventually only have 2 feet left (less than 5 feet) so you can't cut it. In addition for every five feet he finds he can cut another due to the fact that he has 27 feet so if you add five and five together you get ten which means you can cut a five foot ribbon twice if you find it. Although this also means that you will be left with a 2 foot ribbon.

27 - 5 --- 22	22 - 5 --- 17	17 - 5 --- 12	12 - 5 --- 7	7 - 5 --- 2 feet of ribbon left
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Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$ Feet or 1 Foot
2	3	$\frac{4}{5}$ Feet or 4 Feet

$$\begin{array}{r} 09\frac{1}{5} \\ 5 \overline{)46} \\ \underline{0} \\ 46 \\ \underline{45} \\ 1 \end{array}$$

$$\begin{array}{r} 03 \\ 5 \overline{)19} \\ \underline{15} \\ 4 \end{array}$$

2 A. 1.5 points – two correct answers (9 and 3) and complete support. Note that if multiple answers are given for any of the entries in the table, all must be correct in order to give credit for that entry. Also note that seeing a remainder of “4” when 19 is divided by 5 is an adequate reference.

B. 1 point – incorrect answer (3), complete explanation.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool, is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

When Zoe adds 5 ft of ribbon to her original amount she will have 5 more feet of ribbon in all. If every time she cuts the same amount of ribbon she adds on, it would be just like adding $\text{—} + 5 - 5 = \text{—}$. The remaining amount of ribbon if the amount of ribbon was 27 would be 3 feet of ribbon.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{46}$
2	3	$\frac{4}{19}$

$$9 \times 5 = 45$$

$$5 \times 3 = 15$$

$$\begin{array}{r} 19 \\ -15 \\ \hline 4 \end{array} \quad \begin{array}{r} 46 \\ -45 \\ \hline 1 \end{array}$$

2

A. 1.5 points – two correct answers (9 and 3) and complete support. Note that for this item, a “check” is given full support credit (as long as the remainders are also referenced) because there is only 0.5 point total available for complete support.

B. 1 point – correct answer (2) and correct but incomplete explanation of *why*.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

Zoe will always have the same number of feet remaining because for every additional 5 feet of ribbon she cuts, none of it will contribute towards the amount of ribbon remaining. 2 feet of ribbon will always be remaining.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9 feet	0.2 feet
2	3 feet	0.8 feet

$$\begin{array}{r}
 \textcircled{2} \quad \textcircled{3.8} \\
 5 \overline{) 19.0} \\
 \underline{-15.0} \downarrow \\
 4.0 \\
 \underline{-4.0} \\
 0
 \end{array}
 \qquad
 \begin{array}{r}
 \textcircled{1} \quad \textcircled{9.2} \\
 5 \overline{) 46.0} \\
 \underline{-45.0} \downarrow \\
 1.0 \\
 \underline{-1.0} \\
 0
 \end{array}$$

1 A. 1.5 points – two correct answers (9 and 3) and complete support. Note that decimals are adequate for the support, but in the table *fractions* are required for the length of the remaining pieces. Also note that if an *incorrect label* is included in the table (none is required), the paper cannot receive a score of “4”. There is no penalty at any other score point, as seen here.

B. 0 points – incorrect answer ($27\frac{1}{3}$) and incorrect explanation.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

The reason is because doesn't have an exact number of that can equally be divided into pieces that are 5 foot long. The unknown number is $27\frac{1}{3}$.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet

9 45 ft

- spool 2: 19 feet

3 15 ft

$$\begin{array}{r} 9 \text{ R } 1 \\ 5 \overline{)46} \\ \underline{-45} \\ 1 \end{array} \quad \begin{array}{r} 3 \text{ R } 4 \\ 5 \overline{)19} \\ \underline{-15} \\ 4 \end{array}$$

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9 or 45 ft	$\frac{1}{5}$
2	3 or 15 ft	$\frac{4}{5}$

First to get nine I divided forty six by five to get nine remainder one so then it is one over five. Now I got the three by dividing the nineteen by five to get three remainder four so then it is four over five.

1 A. 1.5 points – two correct answers ($\frac{1}{5}$ and $\frac{4}{5}$) and complete support. Note that if multiple answers are given for any of the entries in the table, all must be correct in order to give credit for that entry.

B. 0 points – no answer is given and the explanation is incorrect.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

If the spool contained thirty feet of ribbon she could cut six five feet of ribbon. Because if I multiply six times five I will get thirty and since the minimum is twenty seven if that was the total length she would not be able to make a whole five feet because five can't go into twenty-seven.

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Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	11:46	2:19
2	1:47	2:15

what I did is I took
five numbers off the
number and that is
How I got the answer

0

A. 0 points – all incorrect answers and incorrect support.

B. 0 points – no answer is given and the explanation is incorrect.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

what you have to do
is you have to subtract
5 and you will have
4 then you have 27 feet
which you need to
subtract 10 from it and
you have the answer

PSSA, Grade 5 Math

Spools of Ribbon

Handscoring Training Set 1

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	45	$\frac{1}{46}$
2	15	$\frac{4}{19}$

Spool 1: The greatest possible number is 45. I know this because if you count by 5 up to 46, the highest number you can get is 45.

Spool 2: The greatest possible number is 15. I know this because if you count by 5 up to 19, the highest you can get by 5's is 15.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

I know this because if she cuts 5 foot long ribbon pieces it will be the same number of ribbon remaining. If she cuts 5 ft. pieces of ribbon the highest number will be 25.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1; 46 feet
- spool 2; 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

$$1) 46 \div 5 = 9 \frac{1}{5}$$

$$2) 19 \div 5 = 3 \frac{4}{5}$$

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

For every additional 5 feet of ribbon on the spool Zoe can cut 1 more 5-foot-long piece because she is adding one more group. If Zoe adds 5 feet then she can take away 5 feet. There will be no accumulation if she is just taking away what she adds. If no new pieces of ribbon are being added on then the amount of extra will always stay the same. To find the number of ribbon feet remaining you would divide 27 feet by 5 feet and get 5 groups of feet and 2 feet. Therefore there would be two additional feet no matter how much more groups of 5 are added.

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Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

Work

$$\begin{array}{r} 5 \overline{)46} \\ \underline{45} \\ 1 \end{array}$$

$$\begin{array}{r} 5 \overline{)19} \\ \underline{15} \\ 4 \end{array}$$

Explain

Zoe can cut $9\frac{1}{5}$ pieces of ribbon from spool 1, and she can cut $3\frac{4}{5}$ pieces of ribbon from spool 2. First I did $46 \div 5$ to get 9. Then I turned the remainder into a fraction by making my divisor my denominator. After that I did $19 \div 5$ to get 3. Last I changed my remainder into a fraction by making my divisor my denominator.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

Zoe will have the same number of ribbon every time she cuts 5 feet of ribbon off, she will have the same number because she extra ribbon. That is why Zoe will have the same number every time she cuts off 5 feet of ribbon.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

$$\begin{array}{r} 9 \overline{)46} \\ \underline{45} \\ 1 \end{array} \quad \begin{array}{r} 3 \overline{)19} \\ \underline{15} \\ 4 \end{array}$$

To find my answer I divided 46 and 19 by 5. I knew that 9 whole pieces could come out of spool 1, and 3 whole pieces could come out of spool 2. To find the fractions I used the remainders as the numerators and the divisors as the denominators.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

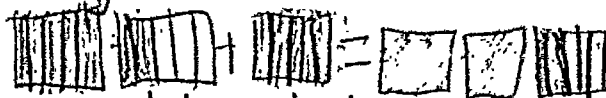
- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

Zoe will always have $\frac{2}{5}$ of a foot left. This is because if she has 27 ft. she has $5\frac{2}{5}$ ft. If you add five so the number is 32, the remainder is still $\frac{2}{5}$ ft. You can keep adding five and the remaining fraction will be the same. This is because you are adding an entire piece each time.

$$\begin{array}{l} 27 + 5 = 32 \\ 27 \div 5 = 5\frac{2}{5} \\ 32 + 5 = 37 \\ 32 \div 5 = 6\frac{2}{5} \\ 37 + 5 = 42 \\ 37 \div 5 = 7\frac{2}{5} \\ 42 \div 5 = 8\frac{2}{5} \end{array}$$

$$1\frac{2}{5} + 1 = 2\frac{2}{5}$$



If you add a whole piece, the remainder will be the same.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9.2	$\frac{1}{5}$
2	3.8	$\frac{6}{19}$

$$\text{Spool 1} = 46 \div 5 = 9.2$$

$$\text{Spool 2} = 19 \div 5 = 3.8$$

Spool 2

$$\begin{array}{r} 46 \\ 5 \overline{) 46} \\ \underline{40} \\ 6 \end{array}$$

Spool 1

$$\begin{array}{r} 38 \\ 5 \overline{) 38} \\ \underline{30} \\ 8 \end{array}$$

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

It is like that because Zoe does not actually know the exact number of additional feet of ribbon on the spool. In this case there is 2 feet of spool remaining.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

I divided each length of the ribbon on each spool by 5. Then, I put the remainder as a numerator and 5 as the denominator, and that's how I got the fraction.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

For every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet remaining because you are not adding a fraction, you are adding a whole number. For example, you have 5 pieces that are 5 feet and $\frac{2}{5}$ remaining and you add 1 more additional piece of ribbon that is 5 feet, you would have 6 pieces of ribbon that are 5 feet and still have $\frac{2}{5}$ remaining. $\frac{2}{5}$ of the 5-foot-long piece is remaining.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9.2	1.84
2	3.8	0.76

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

$$5 \div 1 = (5 \div 27) = 5.4 \text{ feet}$$

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9 pieces	$9\frac{1}{10}$ pieces
2	3 pieces	$3\frac{4}{5}$ pieces

work for this part

work for this one

$$\begin{array}{r} \times 3.8 \\ 5 \overline{) 19.0} \\ \underline{15} \\ 40 \\ \underline{40} \\ 00 \end{array}$$

$$\begin{array}{r} \times 9.8 \\ 5 \overline{) 46.0} \\ \underline{45} \\ 10 \\ \underline{10} \\ 00 \end{array}$$

8

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

There would be 2 ft of additional ribbon always remaining. This happens because there is a minimum of 27 ft which means there could be more.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

Work

Explanation

$$\begin{array}{r} 9 \text{ } 45 \text{ } 11 \\ 5 \overline{)45} \\ \underline{45} \\ 0 \end{array}$$

$$\begin{array}{r} 3 \text{ } 15 \text{ } 4 \\ 5 \overline{)15} \\ \underline{15} \\ 0 \end{array}$$

$$\begin{array}{r} 3 \text{ } 15 \text{ } 4 \\ 5 \overline{)19} \\ \underline{15} \\ 4 \end{array}$$

The greatest number of 5-foot-long pieces Zoe can cut from spool 1 is 9, and she can cut 3 5-foot-long pieces from spool 2. First, I divided 46 by 5 to see how many 5-foot pieces could fit into 46 feet. I calculated that 9 5-foot pieces would fit. The fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces is $\frac{1}{5}$ since there is 1 foot left out of 5 feet, which isn't enough. Next, for spool 2, I divided 19 by 5, and I calculated that 3 5-foot-long pieces can fit into 19 feet. Since the remainder is 4, and the cut of 5 feet, $\frac{4}{5}$ of a 5-foot-long piece remains (4 5-foot-long pieces can fit into 19 feet, and 3 5-foot-long pieces can fit into 15 feet).

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

Work	Explanation
<p>27 ft</p> <p>5 5-foot-long pieces</p> $\begin{array}{r} 5 \\ \overline{)27} \\ \underline{25} \\ 2 \end{array}$ <p>2 feet remaining</p>	<p>This is why for every additional 5-foot of ribbon on the spool, Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining. First, even if she has additional ribbon, she'll still have 5 feet remaining from her other spools. That is why she will still have the same remaining amount of ribbon.</p>

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

explain	Work
<p>(1) First, I thought long and hard and then I know that $9 \times 5 = 45$ so, I would do that and subtract and get 1 left over for extras.</p> <p>(2) First, I thought that it was $3 \times 5 = 15$ but I thought I could go higher so I did but, it was over 19 so then I did $14 \div 5 = 2$, I had 4 extras.</p> <p>$1 + 4 = 5$ so you could add it to number 1 or 2.</p>	<p>(1) $\begin{array}{r} 9 \\ \times 5 \\ \hline 45 \end{array}$</p> <p>$\frac{1}{5}$ extra</p> <p>(2) $\begin{array}{r} 3 \\ \times 5 \\ \hline 15 \end{array}$</p> <p>$\begin{array}{r} 19 \\ - 15 \\ \hline 04 \end{array}$</p> <p>$\frac{4}{5}$ extra</p>

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

~~What~~ explain

First, I thought in my head that she can do that because she just cut it up and it will still be on earth because hopefully she didn't get on a rocket and fly to mars and leave it there but even if it is cut into 1 foot of ribbon it will always have the same number of feet of ribbon remaining.

Subject: Math

Item: Spools of Ribbon

Grade: 5

Name _____

Number	Score	Notes
T1-1		
T1-2		
T1-3		
T1-4		
T1-5		
T1-6		
T1-7		
T1-8		
T1-9		
T1-10		

PSSA and Keystone Exams
Fall 2015
Item Writing and Handscoring Training Workshops

PSSA, Grade 5 Math

Spools of Ribbon

Handscoring
Training Set 2

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

Remaining: 2

I think she doesn't cut it right on the five feet mark. That she cuts it under five feet.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

$$\begin{array}{r} 3\frac{4}{5} \\ 5 \overline{) 19} \\ \underline{- 15} \\ R 4 \end{array}$$

$$\begin{array}{r} 3\frac{4}{5} \\ 5 \overline{) 46} \\ \underline{- 45} \\ R 1 \end{array}$$

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

Zoe will always have 2 extra
feet of ribbon because the
minimum number is two and for
remaining
each additional 5 ft. piece,
two feet will always remain present.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

Spool #1

$$\begin{array}{r} 46 \\ 5 \overline{)46} \\ \underline{45} \\ 1 \end{array}$$

9 R1

$\frac{1}{5}$

Spool #2

$$\begin{array}{r} 19 \\ 5 \overline{)19} \\ \underline{15} \\ 4 \end{array}$$

3 R4

$\frac{4}{5}$

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

Because the ribbon will still be there just not on the spool

$$\begin{array}{r} 5 \overline{) 27} \quad 5 \text{ R } 2 \\ \underline{25} \\ 2 \end{array}$$

2 feet remaining

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9.2	$\frac{1}{5}$
2	3.4	$\frac{2}{5}$

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

Zoe has extra ribbon because
the numbers are not equal for five to
go into.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

$$5 \times 9 = 45$$
$$5 \times 3 = 15$$

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

Zoe can cut 1 additional 5-foot long piece of ribbon because every piece is 5 feet long.

The number of feet remaining would be 2 feet because $5 \times 5 = 25$ and 2

$$\begin{array}{r} 27 \\ - 25 \\ \hline 2 \end{array}$$

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

$$\textcircled{1} \begin{array}{r} 46 \\ -1 \\ \hline 45 \\ \hline 15 \end{array}$$

$$\textcircled{2} 1 = \frac{1}{5} \quad 4 = \frac{4}{5}$$

$$\textcircled{3} \begin{array}{l} 45 \div 5 = 9 \\ 15 \div 5 = 3 \end{array}$$

$$\textcircled{4} \begin{array}{l} \text{Spool 1: } 9 \frac{1}{5} \\ \text{Spool 2: } 3 \frac{4}{5} \end{array}$$

To find how many 5-foot-long pieces were in spool 1 and 2, I knew I needed to divide by 5, but I also knew that the number I divide by 5 has to end in 5 or 0. So I subtracted 1 from 46 and got 45. And subtracted 4 from 19 and got 15. The 1 and 4 extra turned into $\frac{1}{5}$ and $\frac{4}{5}$. Finally, I divided 45 by 5 and got 9 and 3. Spool 1: $9 \frac{1}{5}$ Spool 2: $3 \frac{4}{5}$.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

zoe will always have 2ft remaining. This is because if you add 1 piece to 27ft you get 32ft. That is divisible by 5 six times, but there is still 2ft leftover. This will go on and on forever unless you add a 3ft instead of 5ft.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet.

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{2}{10}$
2	3	$\frac{8}{10}$

$$\begin{array}{r} \textcircled{1} 46 \\ \div 5 \\ \hline 9.2 \end{array}$$

$$\begin{array}{r} \textcircled{2} 19 \\ \div 5 \\ \hline 3.8 \end{array}$$

I first, divided 46 by 5, to get 9.2.
 I then, divided 19 by 5, to show my differences
 $\frac{8}{10}$.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

$$\begin{array}{r} \textcircled{1} \quad 27 \\ \underline{5} \\ 5.4 \end{array} \quad \begin{array}{r} \textcircled{2} \quad 32 \\ \underline{5} \\ 6.4 \end{array}$$

I first got 27 and divided it by 5 to show my answer 5.4.

Next, I add 5 to 27 and got 32. I got 32 and divided it by 5 to get 6.4.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

$$\begin{array}{r} 9 \text{ R } 1 = 9\frac{1}{5} \\ 5 \overline{)46} \\ \underline{45} \\ 1 \end{array} \quad \begin{array}{r} 3 \text{ R } 4 = 3\frac{4}{5} \\ 5 \overline{)19} \\ \underline{15} \\ 4 \end{array}$$

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

27 is not divisible by 5, so if $27 \div 5 = 5\frac{2}{5}$ then for every 5 added 2 feet will be the remainder. $27 + 5 = 32$, $32 \div 5 = 6\frac{2}{5}$ so if it can find every number will have 2 feet leftover.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

- A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.**

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	8	$\frac{8}{46}$
2	2	$\frac{2}{19}$

I count how many problems I did till I get to less than or 5

S Pool 11
|||||
8

S Pool 12
2

⑪
 $\begin{array}{r} 46 \\ - 5 \\ \hline 41 \\ - 5 \\ \hline 36 \end{array}$

$\begin{array}{r} 31 \\ - 5 \\ \hline 26 \\ - 5 \\ \hline 21 \end{array}$

$\begin{array}{r} 210 \\ - 5 \\ \hline 205 \\ - 5 \\ \hline 200 \end{array}$

$\begin{array}{r} 9 \\ - 5 \\ \hline 4 \end{array}$

$\begin{array}{r} 191 \\ - 5 \\ \hline 186 \\ - 5 \\ \hline 181 \end{array}$

~~$\begin{array}{r} 21 \\ - 5 \\ \hline 16 \end{array}$~~

~~$\begin{array}{r} 21 \\ - 5 \\ \hline 16 \end{array}$~~

~~$\begin{array}{r} 21 \\ - 5 \\ \hline 16 \end{array}$~~

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

because you are just still
cutting 5 feet just two
at the same time it is just
- 10

$$\begin{array}{r} 27 \\ - 10 \\ \hline 17 \\ - 10 \\ \hline 7 \end{array}$$

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1; 46 feet
- spool 2; 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

$$\begin{array}{r} 46 \\ \div 5 \\ \hline 9 \text{ R } 1 \end{array}$$

$$\begin{array}{r} 19 \\ \div 5 \\ \hline 3 \text{ R } 4 \end{array}$$

78. **Continued.** Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

~~32 37 42 47 52 57 62 67~~
Remaining is still the same.

Name _____

Number	Score	Notes
T2-1		
T2-2		
T2-3		
T2-4		
T2-5		
T2-6		
T2-7		
T2-8		
T2-9		
T2-10		

PSSA, Grade 5 Math

Spools of Ribbon

Handscoring Practice Set*

*Responses in this set do not have true scores. Apply scores based on scoring criteria.

76. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

Spool 1: 46 ft

$$\begin{array}{r} 9 \\ 5 \overline{)46} \\ \underline{-45} \\ 1 \end{array}$$

9 whole pieces

$\frac{1}{5}$ of a 5 ft long piece remaining

Spool 2: 19 ft

$$\begin{array}{r} 3 \\ 5 \overline{)19} \\ \underline{-15} \\ 4 \end{array}$$

3 whole pieces

$\frac{4}{5}$ of a 5 ft long piece remaining

76. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

The reason why even if you add an additional 5 feet of ribbon on the spool, you can cut another 5 foot long piece of ribbon but still have the same number of feet remaining is because if you pretend the spool contained only 27 feet of ribbon, with no additional feet, then you would have 5 whole pieces, with 2 feet remaining. Then, if you make 27 feet, 32 feet of ribbon, you would have 6 whole pieces, but still 2 pieces left over. That's because if you add 5 additional pieces, that would just make another whole piece, and still leave 2 feet of ribbon remaining. Yes, to answer the second part of the question, there would be 2 feet of ribbon remaining!

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1; 46 feet
- spool 2; 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

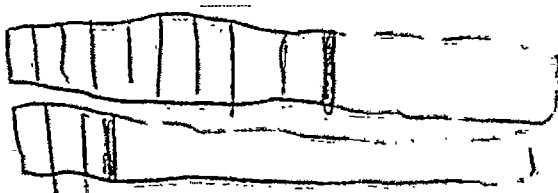
A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9 ft	1 ft
2	3 ft	4 ft



78. *Continued.* Please refer to the previous page for task explanation:

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

The number of feet remaining would be 2 ft (2 inches) because she has a 27 ft long spool of ribbon and she cuts 5 ft of so she would cut off 5 pieces of 5 ft ribbon and have 2 ft left over.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1; 46 feet
- spool 2; 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9 ft	1 ft
2	3 ft	4 ft

work explanation

Spool 1:
$$\begin{array}{r} 46 \\ 5 \overline{) 46} \\ \underline{45} \\ 1 \end{array}$$

 Answer: 9 R1

Spool 2:
$$\begin{array}{r} 19 \\ 5 \overline{) 19} \\ \underline{15} \\ 4 \end{array}$$

 Answer: 3 R4

I divided the number of feet for each spool by 5 because I knew I would have to do it to get my answers and remainders.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

work	explanation
<p> $\begin{array}{r} \text{spool 3: } 5 \overline{) 27} \\ \underline{-25} \\ 2 \end{array}$ </p> <p>Answer: 5 R2</p>	<p>zoe will have 2 feet remaining and will always have a remainder because 5 can go into 27 5 times, but will always have a remainder of 2.</p>

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9 R 1	$\frac{1}{5}$
2	3 R 4	$\frac{4}{5}$

we take the number $\div 5$ because she did 5 foot.

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

we gonna \div by 5 $\approx 5.4 \rightarrow$ decimal

$\frac{54}{10} \rightarrow$ Fraction

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1; 46 feet
- spool 2; 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

$$\begin{array}{r} 3.8 \\ 5 \overline{) 19} \end{array} \quad \begin{array}{r} 9.2 \\ 5 \overline{) 46} \end{array}$$

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

To find this answer you first
divide 27 by 5 to get 5.4 then
you take the answer and round it up
to get 6 feet.

76. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1; 46 feet
- spool 2; 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

$$\begin{array}{r} 09R1 \\ 5 \overline{)46} \\ \underline{45} \\ 1 \end{array}$$
$$\begin{array}{r} 03R4 \\ 5 \overline{)19} \\ \underline{15} \\ 4 \end{array}$$

76. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

Zoe will get another 5-foot-long piece of ribbon every time she adds an additional 5 feet of ribbon, because everytime, she cuts off 5 feet, so if she adds another 5 feet then she can cut off another 5 feet of ribbon. Also, Zoe will always have the same amount of ribbon remaining (2 ft) because everytime she adds 5 feet of ribbon that's another piece she can cut off, but it doesn't do anything to the remaining the first time. For example, 27 ft ÷ 5 ft of each piece equals 5 pieces with a ft left over, but if you add 5 ft, 32 ft ÷ 5 ft = 6 pieces with 2 ft remaining.

$$\begin{array}{r} 05R2 \\ 5 \overline{)27} \\ \underline{25} \\ 2 \end{array} \quad \begin{array}{r} 06R2 \\ 5 \overline{)32} \\ \underline{30} \\ 2 \end{array}$$

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

Spool 1

length of feet

greatest # of 5-foot long pieces

Number of feet

9

5 | 46

- 45

1

Remainder (fraction of 5 foot piece)

Spool 2

length of feet

3

5 | 19

- 15

4

Remainder (fraction)

greatest # of 5-foot long pieces

of 5-foot-long pieces

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

It is because Zoe is cutting the additional part, so she'll always have the 27 feet if she doesn't cut any of that.

The number of feet of ribbon that would be remaining would be 27 ft.

76. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$9\frac{1}{5}$
2	3	$3\frac{4}{5}$

Spool 1

$$\begin{array}{r} 9 \\ 5 \overline{)46} \\ \underline{45} \\ 1 \end{array}$$

Spool 2

$$\begin{array}{r} 3 \\ 5 \overline{)19} \\ \underline{15} \\ 4 \end{array}$$

76. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

For every 5 feet of ribbon on the spool, Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number remaining no matter what. Out of 27 feet of ribbon she will be able to get 5 pieces of 5-foot-long ribbon, with only 2 feet remaining. If you add 5 more feet, it would be 32 feet of ribbon, and you would get 6 pieces of 5-foot-long ribbon. It will always be the same number of feet remaining because you are always adding 5 feet to the total number of feet and you are taking the 5 feet away which leaves the same number left over, every single time, with every number that isn't a multiple of 5. That is why for every additional 5 feet of ribbon on the spool, Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same feet of ribbon remaining.

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

Used a calculator to do $46 \div 5$,
 $19 \div 5$

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

There would be three more feet so you can take another additional 5-foot-long-piece

78. Zoe has two spools of ribbon. The length of the ribbon on each spool is listed below.

- spool 1: 46 feet
- spool 2: 19 feet

Zoe will cut the ribbon into 5-foot-long pieces.

A. Complete the table below by finding the greatest number of 5-foot-long pieces Zoe can cut from each spool.

Also, find the fraction of a 5-foot-long piece of ribbon remaining after cutting the 5-foot-long pieces.

Show or explain all your work.

Spools of Ribbon

Spool Number	Greatest Number of 5-foot-long Pieces on Spool	Fraction of a 5-foot-long Piece Remaining
1	9	$\frac{1}{5}$
2	3	$\frac{4}{5}$

$$46 \div 5 = 9 \text{ and } 1$$

$$19 \div 5 = 3 \text{ and } 4$$

So, 9 and $\frac{1}{5}$, and 3 and $\frac{4}{5}$

78. *Continued.* Please refer to the previous page for task explanation.

Zoe has a third spool of ribbon. The spool contains a minimum of 27 feet of ribbon. The exact number of additional feet of ribbon on the spool is unknown.

- B. Explain why for every additional 5 feet of ribbon on the spool Zoe can cut 1 additional 5-foot-long piece of ribbon but will always have the same number of feet of ribbon remaining.

As part of the explanation, find the number of feet of ribbon that would be remaining.

27 can be divided by 5 five times.
That doesn't change. You keep adding
5. The remaining number is 2.

PRACTICE SET*

Subject: Math Item: Spools of Ribbon Grade: 5

Name _____

Number	Score	Consensus	Notes
P-1			
P-2			
P-3			
P-4			
P-5			
P-6			
P-7			
P-8			
P-9			
P-10			

*** Responses in this set do not have true scores. Apply scores based on scoring criteria.**

PSSA, Grade 5 Math

Spools of Ribbon

Handscoring
Training Sets 1 and 2
True Scores/Annotations

Page	Score	Description
1	0	A. 0 points – incorrect answers and incorrect support. B. 0 points – incorrect or no answer (“same number” or “25”?) and incorrect explanation.
2	4	A. 2.5 points – all four correct answers and complete support. B. 1.5 points – correct answer (2) and complete explanation.
3	2	A. 2.5 points – all four correct answers and complete support. B. 0 points – no answer is given and the explanation is incorrect.
4	3	A. 2.5 points – all four correct answers and complete support. B. 1 point – incorrect answer (“2/5 of a foot”), complete explanation.
5	1	A. 0.5 point – no correct answers, complete support. Note that decimals can be used for the remainders in the <i>support</i> but must be converted to <i>fractions</i> in the table. The work seen on the bottom of the page is “extraneous” and thus a non-issue. B. 0.5 point – correct answer (2), incorrect explanation.
6	4	A. 2.5 points – all four correct answers and complete support. B. 1.5 points – correct answer and complete explanation. “2/5 of the 5-foot-long piece” is equivalent to “2 feet” and is acceptable for the answer.
7	0	A. 0 points – incorrect answers and no support is given. “9.2” and “3.8” in the table are no credit. B. 0 points – incorrect answer and no explanation is given
8	2	A. 1.5 points – two correct answers (9 and 3), complete support. B. 0.5 point – correct answer (2), incorrect explanation.
9	3	A. 2.5 points – all four correct answers and complete support. B. 0.5 point – correct answer (2), incorrect explanation.
10	1	A. 1.5 points – two correct answers (9 and 3), complete support. B. 0 points – incorrect answer and explanation.

Page	Score	Description
1	1	A. 1 point – two correct answers (9 and 3), no support is given. B. 0.5 point – correct answer, incorrect explanation.
2	3	A. 2.5 points – all four correct answers and complete support. B. 0.5 point – correct answer only; the explanation is insufficient for any credit.
3	3	A. 2.5 points – all four correct answers and complete support. B. 0.5 point – correct answer only. The explanation is incorrect and “ $27 \div 5$ ” (with or without a remainder shown) is considered “counting down” which receives no credit.
4	0	A. 0 points – incorrect answers and no support is given. B. 0 points – no answer is given and the explanation is insufficient for any credit.
5	2	A. 2 points – all four correct answers only; the support is too incomplete for credit (a “check” can be full credit for $\frac{1}{2}$ point, but there is no support for the remainders). B. 0.5 point – correct answer only, the explanation is insufficient for any credit.
6	4	A. 2.5 points – all four correct answers and complete support. B. 1.5 points – correct answer and complete explanation.
7	3	A. 2.5 points – all four correct answers and complete support. B. 0.5 point – incorrect answer, correct but incomplete explanation (like SG-4; not enough <i>explanation of “why”</i>).
8	4	A. 2.5 points – all four correct answers and complete support. B. 1.5 points – correct answer and complete explanation.
9	1	A. 0.5 point – incorrect answers, complete support (repeated subtraction with remainders shown is a <i>correct procedure</i> ; counting errors lead to the incorrect answers). B. 0 points – incorrect answer (7) and incorrect explanation.
10	2	A. 2.5 points – all four correct answers and complete support. B. 0 points – no answer is given and the explanation is insufficient for any credit.