New England Common Assessment Program

Released Items
2008

Grade 5
Mathematics

Mathematics

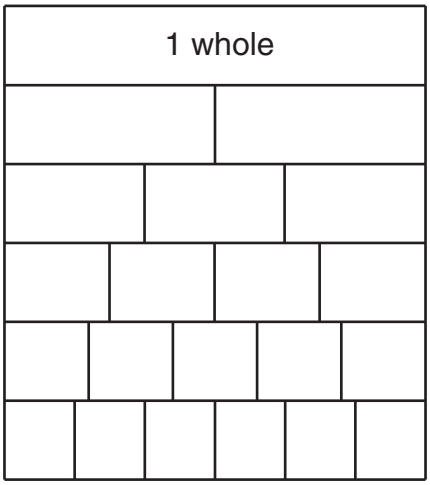
Items with this symbol were selected from Session One—no calculators or other mathematics tools allowed.

1. What number is 12 tens more than 30,605?

   A. 30,617
   B. 30,725
   C. 31,805
   D. 42,605

2. Look at this fraction model.

Fraction Model



Which fraction is greater than $\frac{3}{5}$?

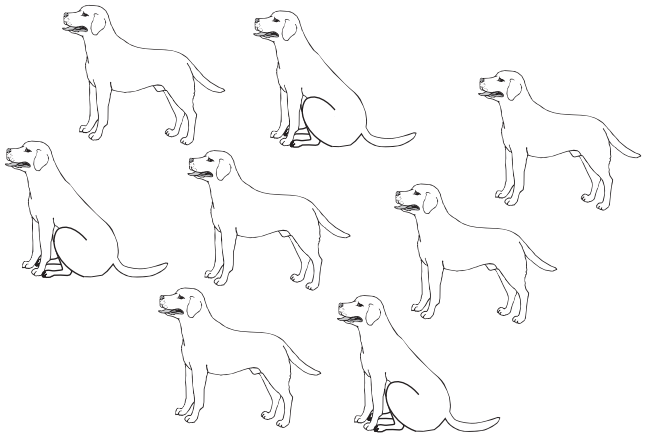
A. $\frac{1}{2}$

B. $\frac{1}{4}$

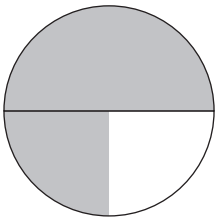
C. $\frac{2}{3}$

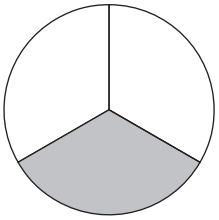
D. $\frac{2}{6}$

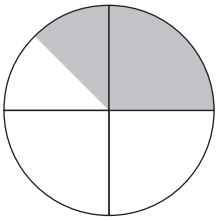
❸ Look at the set of dogs.

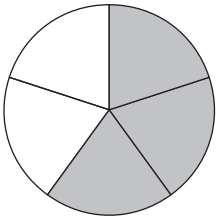


Which circle is shaded gray to represent the fraction of the set of dogs that is sitting?

A. 

B. 

C. 

D. 

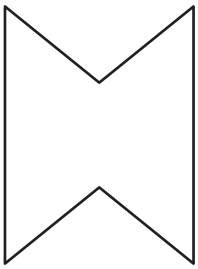
❹ Mr. Martinez divided 24 students into 8 equal groups. Each group has $\triangle$ students. Which number sentence is true?

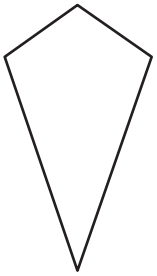
A. $24 = \triangle - 8$
B. $24 = \triangle + 8$
C. $24 = \triangle \div 8$
D. $24 = \triangle \times 8$

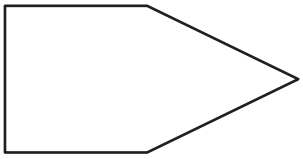
5 Joanne described a shape using these two clues.

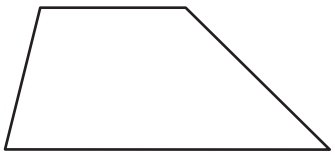
- It has exactly four angles.
- It has exactly one pair of parallel sides.

Which shape did Joanne describe?

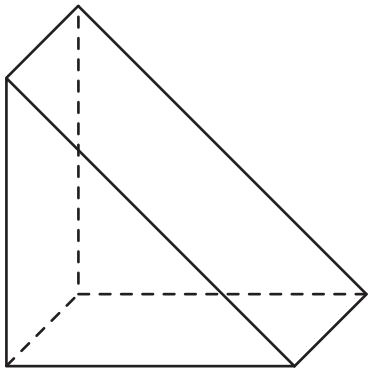
A. 

B. 

C. 

D. 

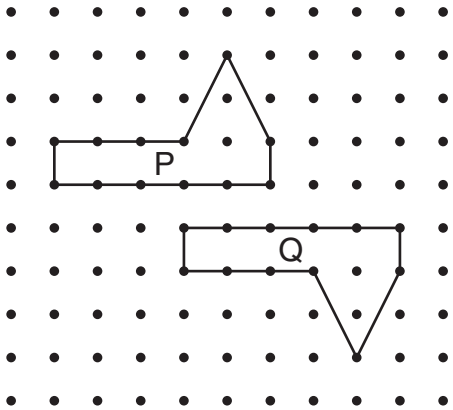
6 Look at this prism.



How many **rectangular** faces does the prism have?

A. 2
B. 3
C. 5
D. 6

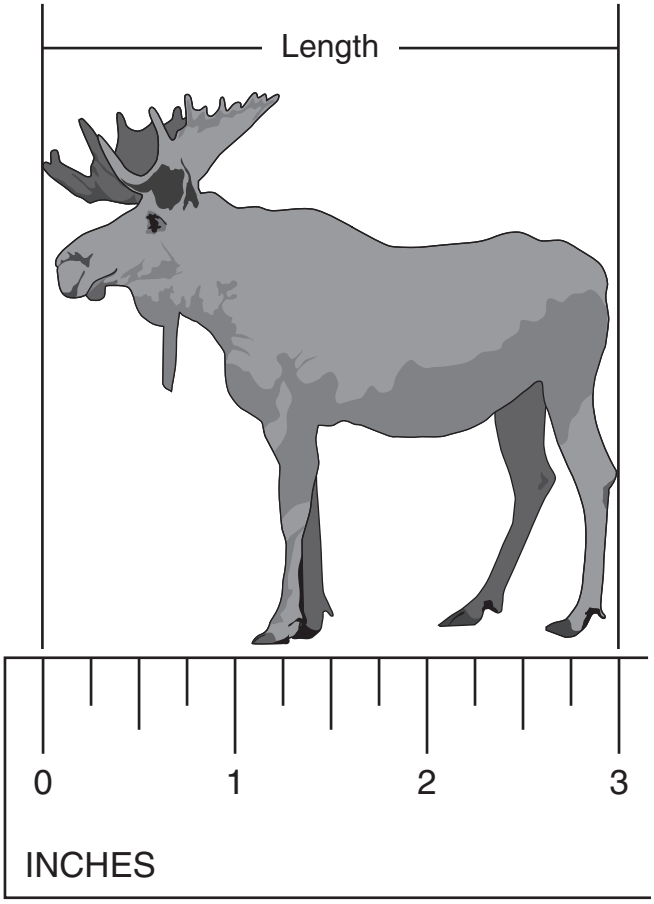
7 Look at Figure P and Figure Q.



Which motion or motions will result in Figure P exactly covering Figure Q?

A. slides only
B. turns only
C. flips and turns only
D. flips and slides only

8 Look at this scale drawing of a moose.



The moose has a length of 9 feet. How many feet does 1 inch represent in the drawing?

A. 2 feet
B. 3 feet
C. 12 feet
D. 27 feet

9 Mr. Randall's class is making puppets. Each puppet needs 60 centimeters of string. How many puppets can Mr. Randall's class make from 12 meters of string? [1 meter = 100 centimeters]

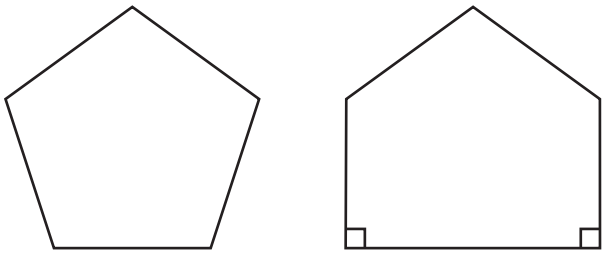
A. 20
B. 50
C. 200
D. 500

10 Each can of stew serves 4 people. Which expression represents the number of people who can be served with c cans of stew?

A. $c + 4$
B. $c \div 4$
C. $4 \times c$
D. $4 \div c$

11 Mr. Bowen used 2 gallons of paint on $\frac{1}{3}$ of his fence. How many more gallons of paint does Mr. Bowen need to finish painting his fence?

12 Look at Shape A and Shape B.



Shape A **Shape B**

Use math words to describe one way Shape A and Shape B are different.

13 Mr. Santos is lining up the 24 members of the school marching band into rows. Each row will contain the same number of band members, with no band members left over.

Give **four** different ways Mr. Santos can line up the members of the school marching band. For each way, write the number of rows and the number of band members in each row. Use numbers, words, or pictures to show how you know.

14 Look at these number sentences.

♡ + 4 = 12

☆ ÷ 2 = ♡

Each heart represents the same number.

a. What number does each heart represent?

b. What number does the star represent?

15 The lists below show all the pitchers and catchers on a softball team.

Pitchers	Catchers
Sara	Kelly
Amber	Erica
Julie	

a. How many possible pairs of one pitcher and one catcher are there? Show your work or explain how you know.

Each pair of one pitcher and one catcher has an equal chance of being chosen by the coach to play in the first game.

b. What is the probability that Kelly will be the catcher in the first game? Show your work or explain how you know.

Grade 5 Mathematics Released Item Information

Released Item Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No Tools Allowed				✓							✓		✓		
Content Strand[1]	NO	NO	NO	NO	GM	GM	GM	GM	GM	FA	NO	GM	NO	FA	DP
GLE Code	4-1	4-2	4-2	4-3	4-1	4-3	4-4	4-5	4-7	4-3	4-4	4-1	4-4	4-4	4-4
Depth of Knowledge Code	2	2	2	2	2	1	1	2	2	1	2	2	2	2	2
Item Type[2]	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	SA	SA	SA	SA	CR
Answer Key	B	C	C	D	D	B	D	B	A	C					
Total Possible Points	1	1	1	1	1	1	1	1	1	1	1	1	2	2	4

[1]Content Strand: NO = Numbers & Operations, GM = Geometry & Measurement, FA = Functions & Algebra, DP = Data, Statistics, & Probability

[2]Item Type: MC = Multiple Choice, SA = Short Answer, CR = Constructed Response

New England Common Assessment Program

Released Items Support Materials 2008

Grade 5 Mathematics

N&O 4.1 **Demonstrates conceptual understanding of rational numbers with respect to: whole numbers** from 0 to 999,999 through equivalency, composition, decomposition, or place value **using models, explanations, or other representations**; and **positive fractional numbers** (benchmark fractions: $a/2$, $a/3$, $a/4$, $a/5$, $a/6$, $a/8$, or $a/10$, where a is a whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship in area, set, or linear models where the number of parts in the whole are equal to, and a multiple or factor of the denominator; and **decimals** as hundredths within the context of money, or tenths within the context of metric measurements (e.g., 2.3 cm) **using models, explanations, or other representations**.

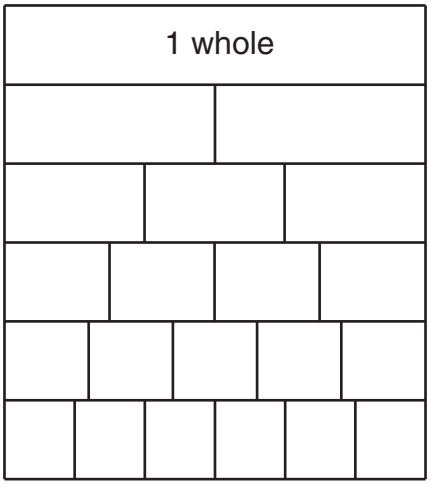
1 What number is 12 tens more than 30,605?

A. 30,617
B. 30,725
C. 31,805
D. 42,605

N&O 4.2 **Demonstrates understanding of the relative magnitude of numbers** from 0 to 999,999 by ordering or comparing whole numbers; and ordering, comparing, or identifying equivalent proper positive fractional numbers; or decimals using models, number lines, or explanations.

2 Look at this fraction model.

Fraction Model



Which fraction is greater than $\frac{3}{5}$?

A. $\frac{1}{2}$

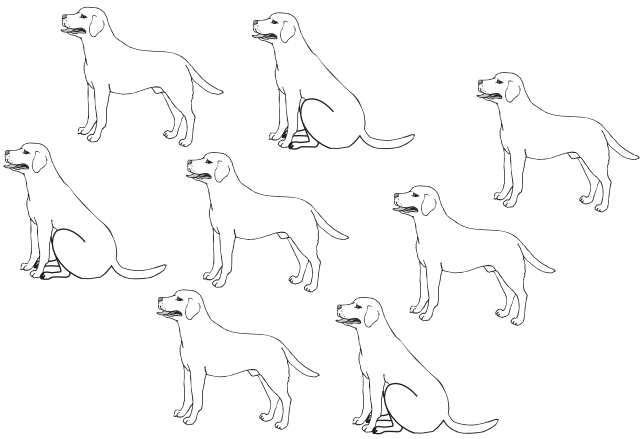
B. $\frac{1}{4}$

C. $\frac{2}{3}$

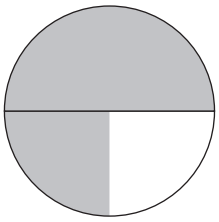
D. $\frac{2}{6}$

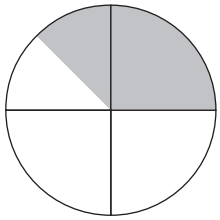
N&O 4.2 **Demonstrates understanding of the relative magnitude of numbers** from 0 to 999,999 by ordering or comparing whole numbers; and ordering, comparing, or identifying equivalent proper positive fractional numbers; or decimals using models, number lines, or explanations.

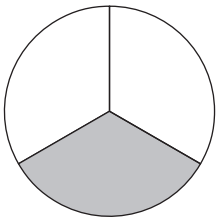
❸ Look at the set of dogs.

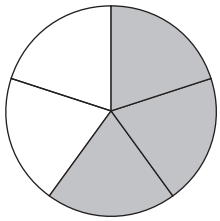


Which circle is shaded gray to represent the fraction of the set of dogs that is sitting?

A. 

C. 

B. 

D. 

N&O 4.3 **Demonstrates conceptual understanding of mathematical operations** by describing or illustrating the relationship between repeated subtraction and division (no remainders); the inverse relationship between multiplication and division of whole numbers; or the addition or subtraction of positive fractional numbers with like denominators using models, number lines, or explanations.

4 Mr. Martinez divided 24 students into 8 equal groups. Each group has $\triangle$ students. Which number sentence is true?

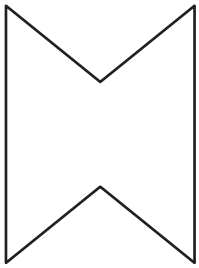
A. $24 = \triangle - 8$
B. $24 = \triangle + 8$
C. $24 = \triangle \div 8$
D. $24 = \triangle \times 8$

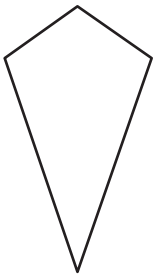
G&M 4.1 **Uses properties or attributes of angles** (number of angles) **or sides** (number of sides, length of sides, parallelism, or perpendicularity) **to identify, describe, or distinguish among** triangles, squares, rectangles, rhombi, trapezoids, hexagons, or octagons; or classify angles relative to 90° as more than, less than, or equal to.

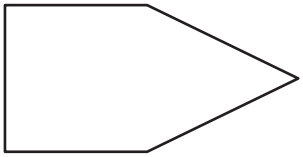
5 Joanne described a shape using these two clues.

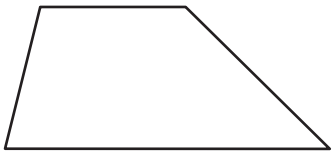
- It has exactly four angles.
- It has exactly one pair of parallel sides.

Which shape did Joanne describe?

A. 

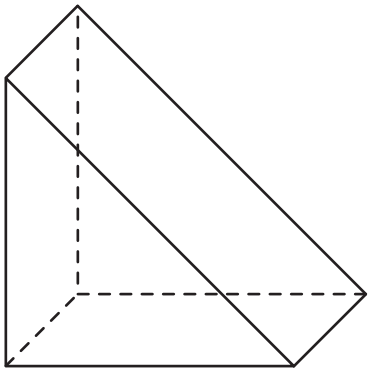
B. 

C. 

D. 

G&M 4.3 **Uses properties or attributes** (shape of bases or number of lateral faces) to **identify, compare, or describe three-dimensional shapes** (rectangular prisms, triangular prisms, cylinders, or spheres).

6 Look at this prism.

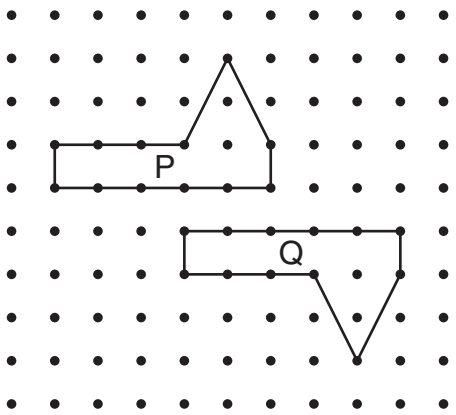


How many **rectangular** faces does the prism have?

A. 2
B. 3
C. 5
D. 6

G&M 4.4 **Demonstrates conceptual understanding of congruency** by matching congruent figures using reflections, translations, or rotations (flips, slides, or turns), or as the result of composing or decomposing shapes using models or explanations.

7 Look at Figure P and Figure Q.

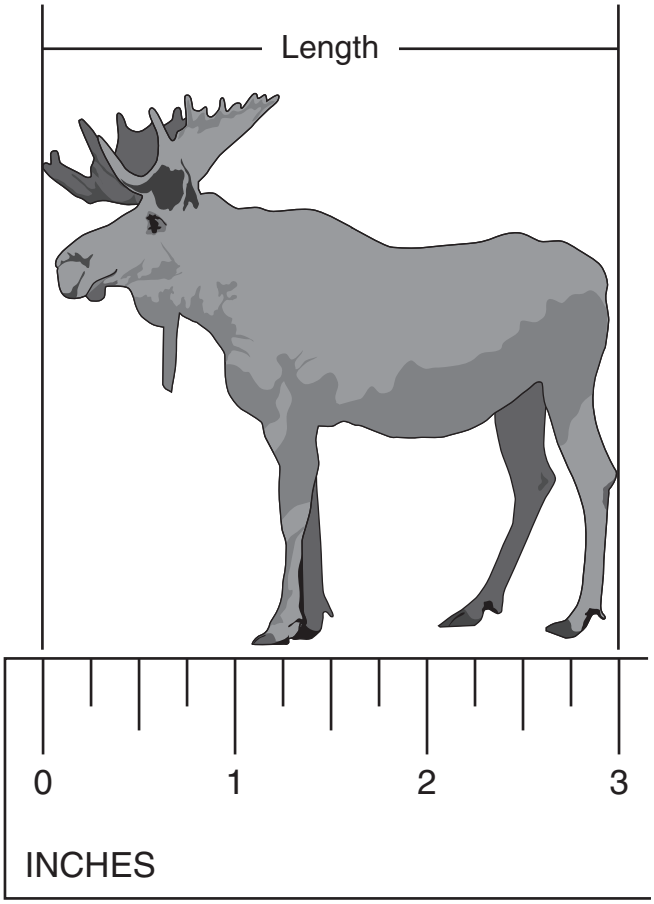


Which motion or motions will result in Figure P exactly covering Figure Q?

A. slides only
B. turns only
C. flips and turns only
D. flips and slides only

G&M 4.5 **Demonstrates conceptual understanding of similarity** by applying scales on maps, or applying characteristics of similar figures (same shape but not necessarily the same size) to identify similar figures, or to solve problems involving similar figures. Describes relationships using models or explanations.

8 Look at this scale drawing of a moose.



The moose has a length of 9 feet. How many feet does 1 inch represent in the drawing?

A. 2 feet
B. 3 feet
C. 12 feet
D. 27 feet

G&M 4.7 **Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems** across the content strands.

9 Mr. Randall's class is making puppets. Each puppet needs 60 centimeters of string. How many puppets can Mr. Randall's class make from 12 meters of string? [1 meter = 100 centimeters]

A. 20
B. 50
C. 200
D. 500

F&A 4.3 **Demonstrates conceptual understanding of algebraic expressions** by using letters or symbols to represent unknown quantities to write simple linear algebraic expressions involving any one of the four operations; or by evaluating simple linear algebraic expressions using whole numbers.

10 Each can of stew serves 4 people. Which expression represents the number of people who can be served with c cans of stew?

A. $c + 4$
B. $c \div 4$
C. $4 \times c$
D. $4 \div c$

N&O 4.4 **Accurately solves problems involving** multiple operations on whole numbers or the use of the properties of factors and multiples; and addition or subtraction of decimals and positive proper fractions with like denominators. (Multiplication limited to 2 digits by 2 digits, and division limited to 1 digit divisors.)

11 Mr. Bowen used 2 gallons of paint on $\frac{1}{3}$ of his fence. How many more gallons of paint does Mr. Bowen need to finish painting his fence?

Scoring Guide

Score	Description
1	Student gives the correct answer, **4** (more gallons).
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Score Point 1
(Example A)

11

2 gallons of paint on $\frac{1}{3}$ of his fence

2 gallons on $\frac{1}{3}$
2 more for $\frac{1}{3}$
+2 more for $\frac{1}{3}$
4 more gallons

$\frac{1}{3} + \frac{1}{3} + \frac{1}{3} = \frac{3}{3}$
4 more gallons of paint to finish his fence

Student's response is correct. (Explanation is not required.)

Score Point 1
(Example B)

11

4 gallons

Student's response is correct. (Units are not required.)

Score Point 0
(Example A)

11

6 gallons

Student's response is incorrect.

Score Point 0
(Example B)

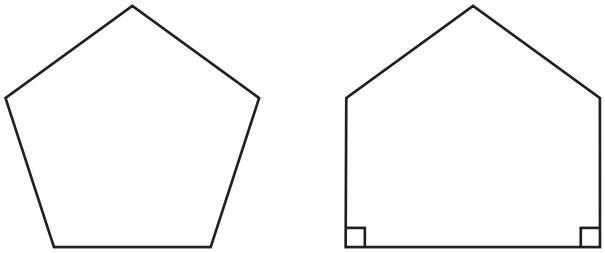
11

$\frac{2}{3}$ Galons

Student's response is incorrect.

G&M 4.1 **Uses properties or attributes of angles** (number of angles) **or sides** (number of sides, length of sides, parallelism, or perpendicularity) **to identify, describe, or distinguish among** triangles, squares, rectangles, rhombi, trapezoids, hexagons, or octagons; or classify angles relative to 90° as more than, less than, or equal to.

12 Look at Shape A and Shape B.



Shape A **Shape B**

Use math words to describe one way Shape A and Shape B are different.

Scoring Guide

Score	Description
1	Student gives one correct way in which the shapes are different.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Score Point 1
(Example A)

⓬

Well, Shape A has slanted sides and shape B has strite sides which make shape A not have right angels and shape B has right angels.

Student gives one correct way in which the shapes are different. Additional information about slanted and straight sides is not relevant but does not contradict the correct response.

Score Point 1
(Example B)

⓬

shape a has less area then shape B

Student gives one correct way in which the shapes are different.

SCORE POINT 0
(EXAMPLE A)

⓬

the botem of Shap A is Different then Shap B

Student does not use appropriate math words to describe a way in which the shapes are different.

SCORE POINT 0
(EXAMPLE B)

⓬

Shape A has 3 more slanted sides then Shape B.

Student does not use appropriate math words to describe a way in which the shapes are different.

N&O 4.4 **Accurately solves problems involving** multiple operations on whole numbers or the use of the properties of factors and multiples; and addition or subtraction of decimals and positive proper fractions with like denominators. (Multiplication limited to 2 digits by 2 digits, and division limited to 1 digit divisors.)

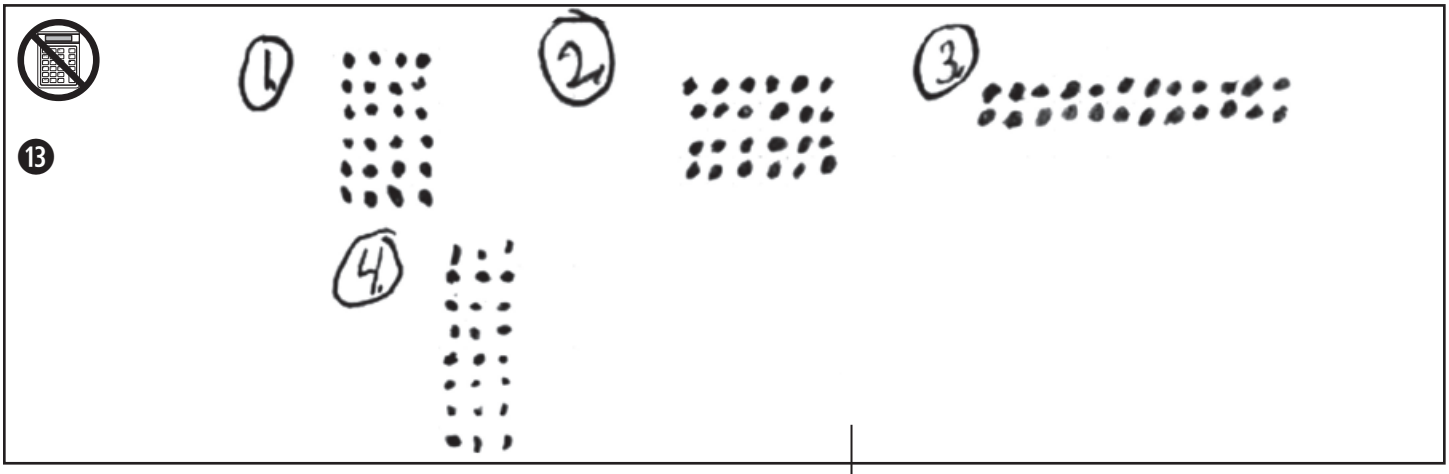
13 Mr. Santos is lining up the 24 members of the school marching band into rows. Each row will contain the same number of band members, with no band members left over.

Give **four** different ways Mr. Santos can line up the members of the school marching band. For each way, write the number of rows and the number of band members in each row. Use numbers, words, or pictures to show how you know.

Scoring Guide

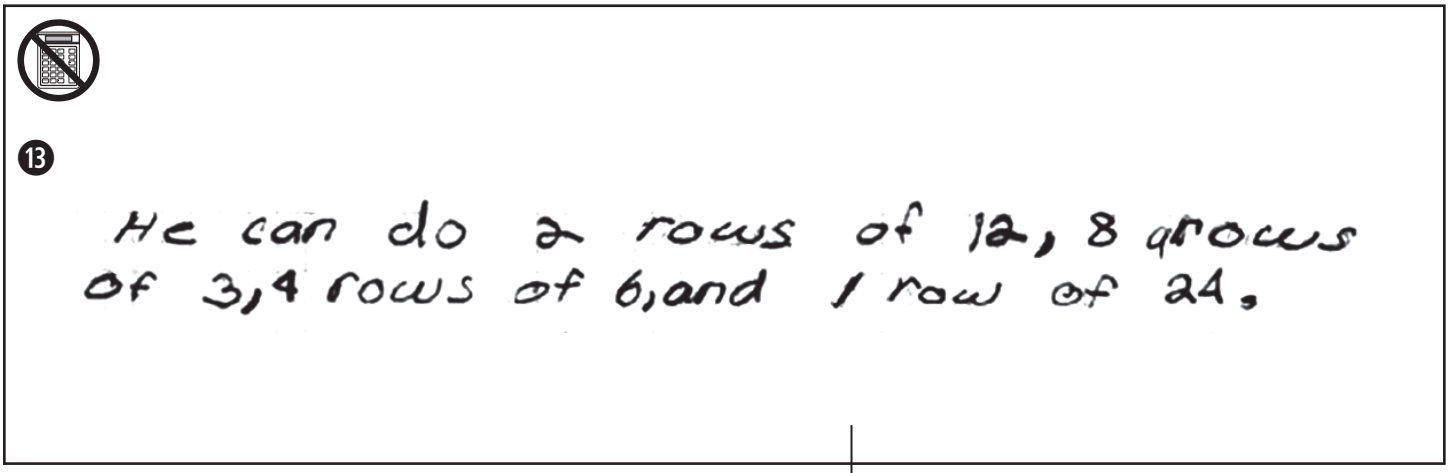
Score	Description
2	Student gives four different ways to line up 24 members and no incorrect ways.
1	Student gives two or three correct ways to line up 24 members and no incorrect ways.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Score Point 2
(Example A)



Student's response is correct.

Score Point 2
(Example B)



Student's response is correct.

Score Point 1
(Example A)

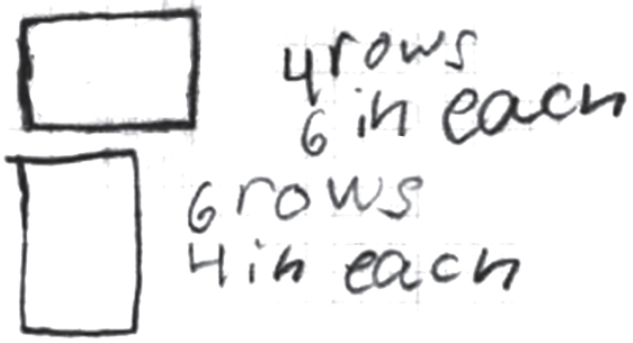
13

8 people 3 rows
4 people 6 rows
12 people 2 rows
5 I use my multiple facts

Student gives three correct ways.

Score Point 1
(Example B)

13



Student gives two correct ways.

Score Point 0
(Example A)

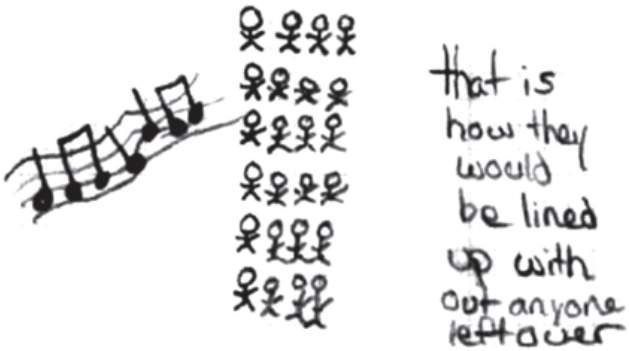
13

You can line them up in 12 rows of 12 students, 6 rows of 14 students, 4 rows of 16 students, and 3 rows of 18

Student's response is incorrect.

Score Point 0
(Example B)

13



Student gives only one correct way.

F&A 4.4 **Demonstrates conceptual understanding of equality** by showing equivalence between two expressions using models or different representations of the expressions, by simplifying numerical expressions where left to right computations may be modified only by the use of parentheses [e.g., $14 - (2 \times 5)$] (expressions consistent with the parameters of M(F&A)–4–3), and by solving one-step linear equations of the form $ax = c$, $x \pm b = c$, where a, b, and c are whole numbers with $a \neq 0$.

14 Look at these number sentences.

♡ + 4 = 12

☆ ÷ 2 = ♡

Each heart represents the same number.

a. What number does each heart represent?

b. What number does the star represent?

Scoring Guide

Score	Description
2	Student correctly answers part a, **8**, and correctly answers part b, **16**.
1	Student correctly answers part a and incorrectly answers part b. OR Student correctly answers part b based on an incorrect answer in part a.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Score Point 2
(Example A)

14

Student's response is correct.

Score Point 1
(Example A)

14

Student's response to part a is incorrect, but the response to part b is correct based on the student's answer in part a.

Score Point 1
(Example B)

14

heart = 8
star = 4

Student's response to part a is correct, but the response to part b is incorrect.

Score Point 0
(Example A)

14

♡ = 2 and 4
☆ = 12

Student's answers to both parts are incorrect.

Score Point 0
(Example B)

14

a. it represent 7+4=12

b 24÷2=12

Student's answers to both parts are incorrect.

DSP 4.4 **Uses counting techniques to solve problems** in context involving combinations or simple permutations (e.g., Given a map – Determine the number of paths from point A to point B.) using a variety of strategies (e.g., organized lists, tables, tree diagrams, or others).

15 The lists below show all the pitchers and catchers on a softball team.

Pitchers	Catchers
Sara	Kelly
Amber	Erica
Julie	

a. How many possible pairs of one pitcher and one catcher are there? Show your work or explain how you know.

Each pair of one pitcher and one catcher has an equal chance of being chosen by the coach to play in the first game.

b. What is the probability that Kelly will be the catcher in the first game? Show your work or explain how you know.

Scoring Guide

Score	Description
4	4 points
3	3 points
2	2 points
1	1 point OR Minimal understanding of pitcher-catcher pairs or probability
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Training Notes:

Part a: 2 points for correct answer, **6**, with sufficient explanation given or work shown to indicate correct strategy
OR
1 point for correct answer, with insufficient or no explanation given or no work shown
or
for sufficient strategy, with incorrect or no answer

Part b: 2 points for correct answer, **3 out of 6 or equivalent** (or a correct answer based on an incorrect answer in part a), with sufficient explanation given or work shown to indicate correct strategy
OR
1 point for correct answer, with insufficient or no explanation given or no work shown
or
for sufficient strategy, with incorrect or no answer

Notes:

- If student gives odds (i.e., 50-50 or 1 to 1) rather than probability, do not award a score of 4; otherwise do not penalize the student.
- Student can answer part b independently of part a.

Score Point 4
(Example A)

a) Student's response is correct, with sufficient work shown to indicate correct strategy.

15

A Sara → Kelly
Amber →
Julie →

There can be 6 different possible pitcher-catcher pairs

Sara → Erica
Amber →
Julie →

B Kelly has a 1 out of 2 chance of being in the first game because There are 2 catchers.

b) Student's response is correct, with sufficient explanation to indicate correct strategy.

Score Point 4
(Example B)

15

A 1 Sara - Kelly
2 Sara - Erica
3 Amber - Kelly
4 Amber - Erica
5 Julie - Kelly
6 Julie - Erica
6 choices

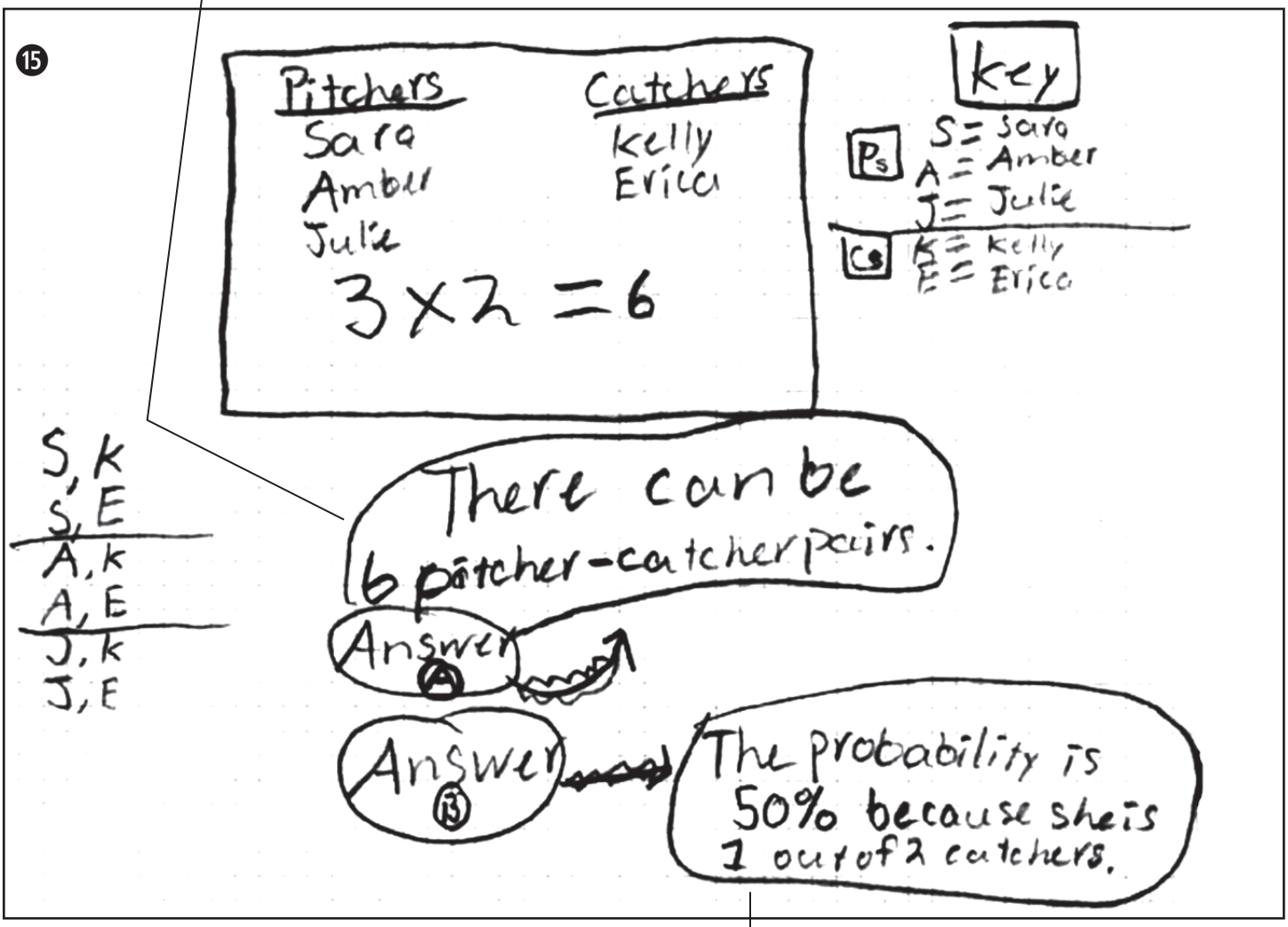
B $\frac{3}{6}$ or $\frac{1}{2}$

a) Student's response is correct, with sufficient work shown to indicate correct strategy.

b) Student's response is correct, with sufficient explanation to indicate correct strategy.

Score Point 4
(Example C)

a) Student's response is correct, with sufficient work shown to indicate correct strategy.



b) Student's response is correct, with sufficient explanation to indicate correct strategy.

SCORE POINT 3
(EXAMPLE A)

a) Student demonstrates appropriate strategy and lists one duplicate pair, but does not state the correct number of possible pairs.

15 2 it could be....

(A) Sara and Kelly
Amber and Erica
Julie and Erica
Julie and Kelly
Amber and Kelly
Amber and Erica
Sara and Erica

(B) 1/2 of a chance Because there's 2 catchers and so he could choose eather one so it would be 1/2 a chance

b) Student's response is correct, with sufficient explanation to indicate correct strategy.

Score Point 3
(Example B)

a) Student's response is correct, with sufficient work shown to indicate correct strategy.

15

A.

There is 6 pairs because each person can be with another 1 time

B. It is a 50-50 chance because there is only 1 other catcher on the team.

b) Student's response is correct, with sufficient explanation to indicate correct strategy, but the student is penalized one point for expressing probability as odds.

Score Point 2
(Example A)

a) Student's response is correct, but with no explanation or work shown.

15

6 Combantions

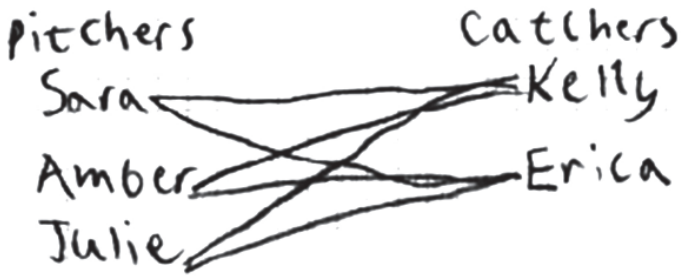
50% Chance for Kelly

b) Student's response is correct, but with no explanation or work shown.

SCORE POINT 2
(EXAMPLE B)

a) Student's response is correct, with sufficient work shown to indicate correct strategy.

15



There are 6 different pitcher-catcher pairs

Answer A

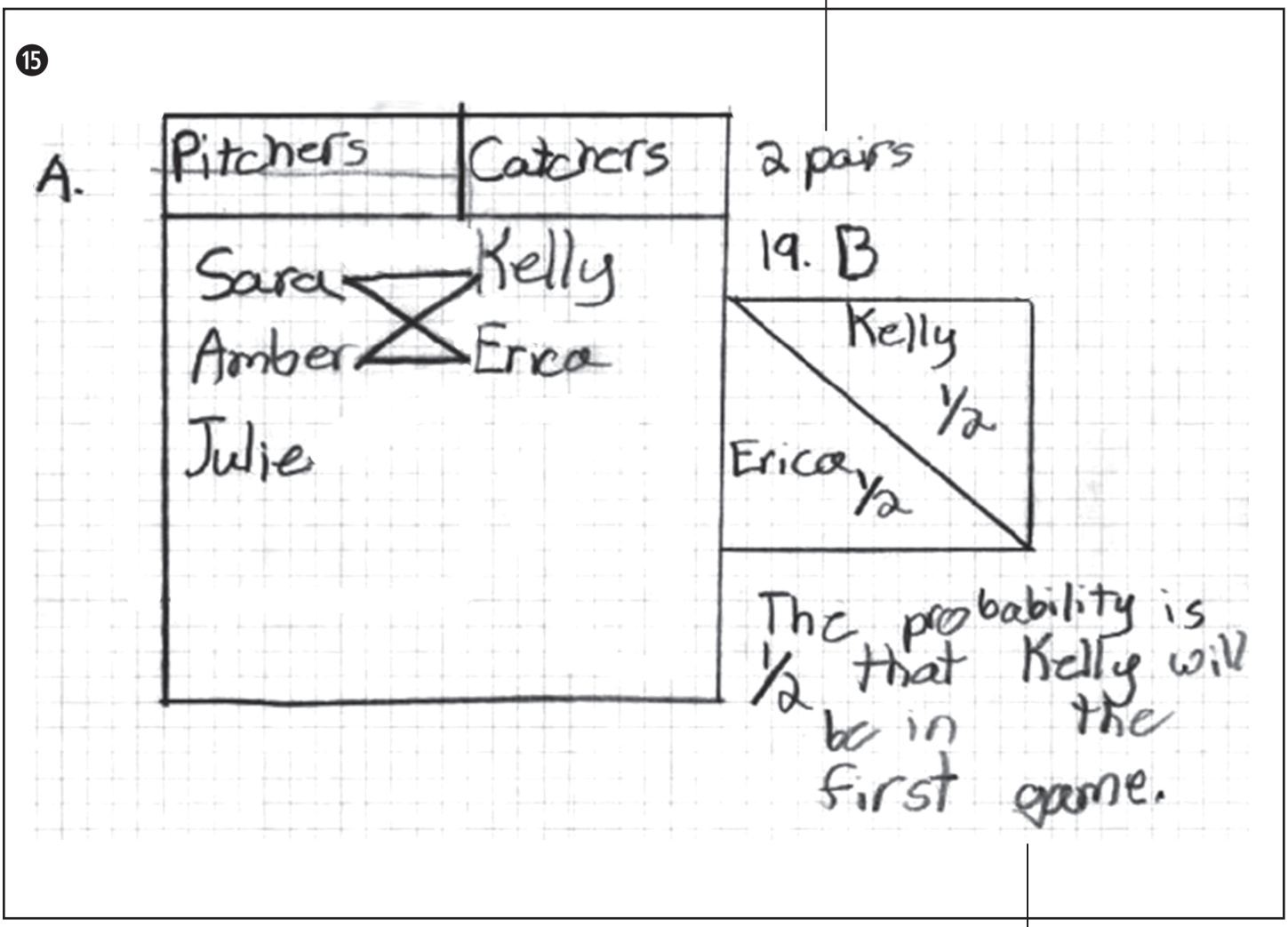
Kelly has $\frac{1}{5}$ chance of being a catcher because there are 5 people and each could be catcher and Kelly is 1 so she has a $\frac{1}{5}$ chance of being catcher in the 1st game.

Answer B

b) Student's response is incorrect.

Score Point 2
(Example C)

a) Student's response is incorrect.



b) Student's response is correct, with sufficient work shown to indicate correct strategy.

Score Point 1
(Example A)

a) Student's response is incorrect.

15

A Pitcher — Catchers — Sara + Kelly
Sara — Kelly
Amber — Erica — Amber + Erica
Julie

the Probabilitu that Kelly will be can catcher for the first game 50 percant

b) Student's response is correct, with no explanation or work shown.

SCORE POINT 1
(EXAMPLE B)

a) Student's response is incorrect.

15

There are 4 possible pitcher-catcher pairs

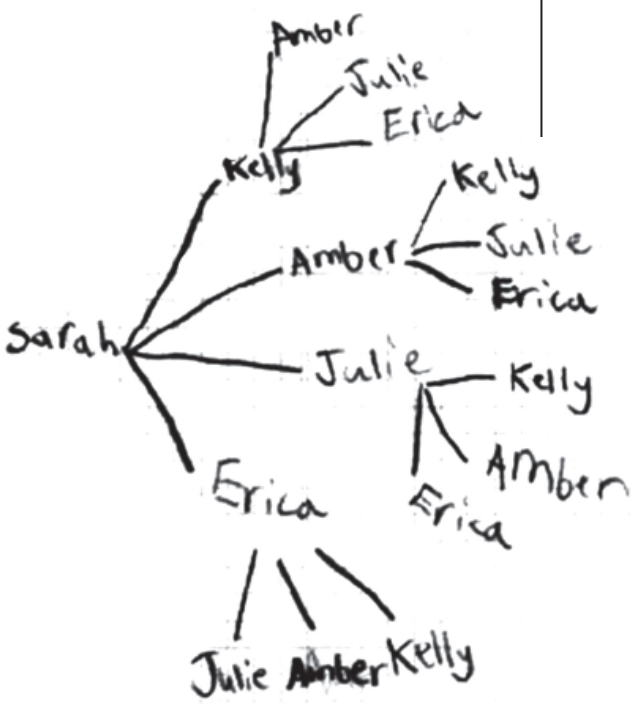
It will be $\frac{1}{2}$ chances of her playing in the game.

b) Student's response is correct, with no explanation or work shown.

SCORE POINT 0
(EXAMPLE A)

a) Student's response is incorrect, with insufficient evidence of correct strategy.

15



Kelly will be firsh at catcher because She is firsh on the list.

b) Student's response is incorrect.

SCORE POINT 0
(EXAMPLE B)

a) Student's strategy is incorrect.

15

A

Pitchers	catchers
Sars	Kelly
Amber	
Julie	Erica

5 posibale becaus e there is 2 catchers and 3 pitchers so there can be 5 pitchers-catchers

B

because Kelly is the first one on the catchers sheet and she was the first one to ask.

b) Student's response is incorrect.