



**NEW ENGLAND  
COMMON ASSESSMENT PROGRAM**

**Released Items  
Support Materials  
2008**

**Grade 5  
Mathematics**

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

**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**.

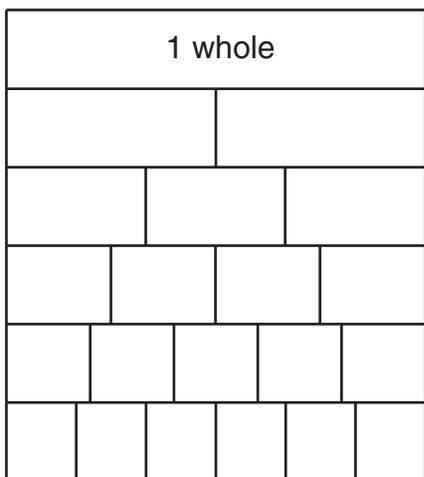
- 1 What number is 12 tens more than 30,605?
- A. 30,617
  - B. 30,725
  - C. 31,805
  - D. 42,605

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

**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**



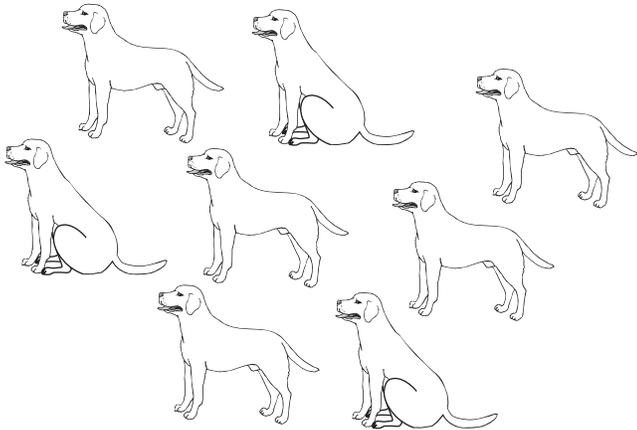
Which fraction is greater than  $\frac{3}{5}$ ?

- A.  $\frac{1}{2}$
- B.  $\frac{1}{4}$
- C.  $\frac{2}{3}$
- D.  $\frac{2}{6}$

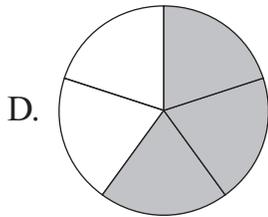
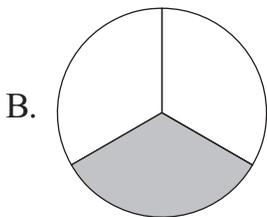
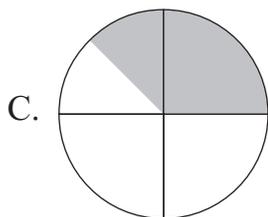
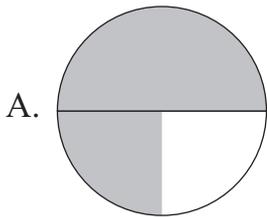
NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

**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.

**3** Look at the set of dogs.



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



NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

**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  $\Delta$  students. Which number sentence is true?
- A.  $24 = \Delta - 8$
  - B.  $24 = \Delta + 8$
  - C.  $24 = \Delta \div 8$
  - D.  $24 = \Delta \times 8$

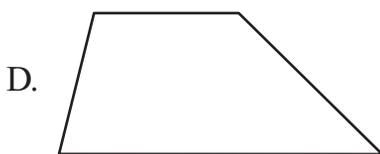
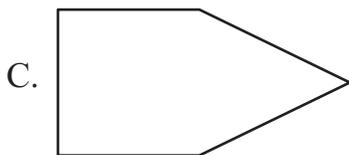
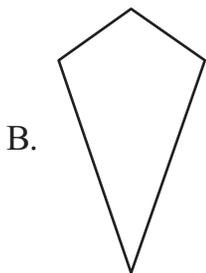
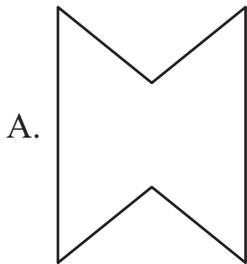
NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

**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  $90^\circ$  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.

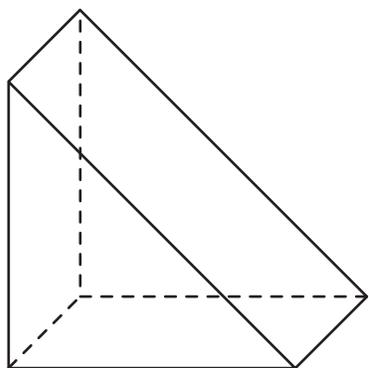
Which shape did Joanne describe?



NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

**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.



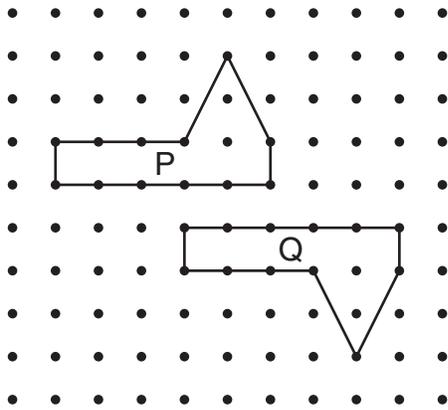
How many **rectangular** faces does the prism have?

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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

**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.



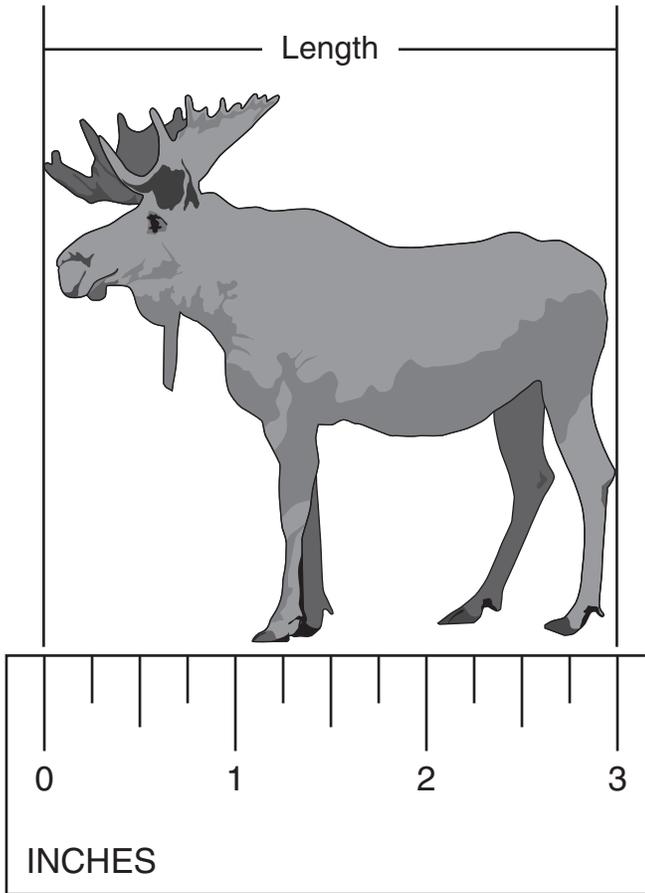
Which motion or motions will result in Figure P exactly covering Figure Q?

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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

**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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

**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.  $4 \div c$

**NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH**

**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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

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.)

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 0  
(EXAMPLE A)



11



6 gallons

Student's response is incorrect.

SCORE POINT 0  
(EXAMPLE B)



11

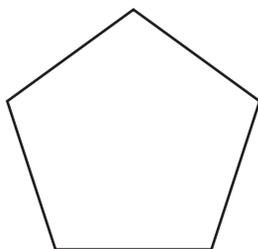
$\frac{2}{3}$  Gallons

Student's response is incorrect.

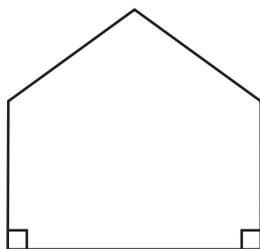
NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

**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  $90^\circ$  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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 1  
(EXAMPLE A)

12

Well, shape A has slanted sides and shape B has straight sides which make shape A not have right angles and shape B has right angles.

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)

12

shape a has less area then shape B

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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 0  
(EXAMPLE A)

12  
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)

12  
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.

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

**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.
<b>Blank</b>	No response

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

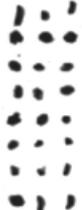
SCORE POINT 2  
(EXAMPLE A)

 13

① 

② 

③ 

④ 

Student's response is correct.

SCORE POINT 2  
(EXAMPLE B)

 13

He can do 2 rows of 12, 8 groups of 3, 4 rows of 6, and 1 row of 24.

Student's response is correct.

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 1  
(EXAMPLE A)

 13

8 people 3 rows  
4 people 6 rows  
12 people 2 rows

I use my multiple facts

Student gives three correct ways.

SCORE POINT 1  
(EXAMPLE B)

 13

 4 rows  
6 in each

 6 rows  
4 in each

Student gives two correct ways.

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

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



that is  
how they  
would  
be lined  
up with  
out anyone  
left over

Student gives only one correct way.

**NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH**

**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.

$$\heartsuit + 4 = 12$$

$$\star \div 2 = \heartsuit$$

Each heart represents the same number.

a. What number does each heart represent?

b. What number does the star represent?

**Scoring Guide**

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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 2  
(EXAMPLE A)

14

$$\begin{aligned} \heartsuit + 4 &= 12 \\ \star \div 2 &= \heartsuit \end{aligned}$$
$$\begin{aligned} \heartsuit &= 8 \\ \star &= 16 \end{aligned}$$

Student's response is correct.

SCORE POINT 1  
(EXAMPLE A)

14

$$\boxed{39. A. 12} \quad \boxed{39. B. 24}$$

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.

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 1  
(EXAMPLE B)

14

$$\text{heart} = 8$$
$$\text{star} = 4$$

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

SCORE POINT 0  
(EXAMPLE A)

14

$$\heartsuit = 2 \text{ and } 4$$
$$\star = 12$$

Student's answers to both parts are incorrect.

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 0  
(EXAMPLE B)

14

a. it represent  $7+4=12$

$$b. 24 \div 2 = 12$$

Student's answers to both parts are incorrect.

**NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH**

**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.

<u>Pitchers</u>	<u>Catchers</u>
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.

**NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH**

**Scoring Guide**

<b>Score</b>	<b>Description</b>
<b>4</b>	4 points
<b>3</b>	3 points
<b>2</b>	2 points
<b>1</b>	1 point OR Minimal understanding of pitcher-catcher pairs or probability
<b>0</b>	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
<b>Blank</b>	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.

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 4  
(EXAMPLE A)

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

15

A

Sara → Kelly  
Amber → Kelly  
Julie → Kelly

B

sara → Erica  
Amber → Erica  
Julie → Erica

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

There can  
be 6 different  
possible  
Pitcher-catcher  
pairs

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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 4  
(EXAMPLE B)

15

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

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

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.

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 4  
(EXAMPLE C)

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

15

Pitchers	Catchers
Sara	Kelly
Amber	Erica
Julie	

$3 \times 2 = 6$

**key**

**P<sub>s</sub>** S = Sara  
A = Amber  
J = Julie

**C<sub>s</sub>** K = Kelly  
E = Erica

S, K  
S, E  
-----  
A, K  
A, E  
-----  
J, K  
J, E

There can be 6 pitcher-catcher pairs.

Answer  $\textcircled{A}$

Answer  $\textcircled{B}$

The probability is 50% because she is 1 out of 2 catchers.

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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

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)  $\frac{1}{2}$  of a chance Because  
there's 2 catchers and so  
he could choose either one  
so it would be  $\frac{1}{2}$  a chance

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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 3  
(EXAMPLE B)

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

15



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.

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 2  
(EXAMPLE A)

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

15

6 combinations  
50% chance for Kelly

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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 2  
(EXAMPLE B)

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

15

Pitchers	Catchers
Sara	Kelly
Amber	Erica
Julie	

There are 6 different pitcher-catcher pairs

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.

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 2  
(EXAMPLE C)

a) Student's response is incorrect.

15

A.

Pitchers	Catchers
Sara	Kelly
Amber	Erica
Julie	

2 pairs

19. B

Kelly	$\frac{1}{2}$
Erica	$\frac{1}{2}$

The probability is  $\frac{1}{2}$  that Kelly will be in the first game.

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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 1  
(EXAMPLE A)

a) Student's response is incorrect.

15

A Pitcher	<u>Catchers</u>	
Sara	<del>Kelly</del>	Sara + Kelly
Amber	<del>Erica</del>	Amber + Erica
Julie		

the probability that Kelly  
will be can catcher for the  
first game 50 percent

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

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

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 him playing in the game.

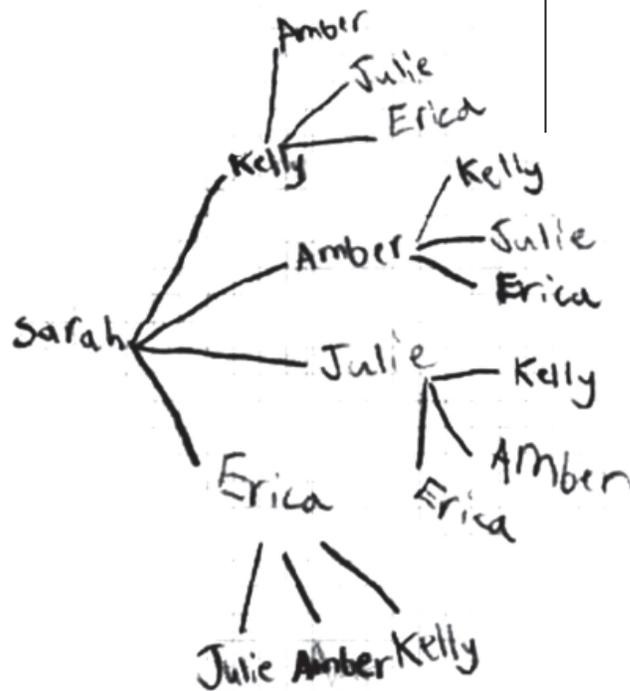
b) Student's response is correct, with no explanation or work shown.

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

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.

NECAP 2008 RELEASED ITEMS  
GRADE 5 MATH

SCORE POINT 0  
(EXAMPLE B)

a) Student's strategy is incorrect.

15

<u>Pitchers</u>	<u>Catchers</u>
Sara	Kelly
Amber	
Julie	Erica

5 possible because there is 2 catchers and 3 pitchers so there can be 5 pitchers-catchers

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

b) Student's response is incorrect.