MASSACHUSETTS COMPREHENSIVE ASSESSMENT SYSTEM

PRACTICE TEST

Mathematics

Grade 3

Student Name

School Name

District Name

MASSACHUSETTS DEPARTMENT OF
ELEMENTARY AND SECONDARY
EDUCATION

Grade 3 Mathematics

SESSION 1

This session contains 8 questions.

*You may **not** use a calculator during this session.* 

Directions

Read each question carefully and then answer it as well as you can. You must record all answers in this Practice Test Booklet.

For some questions, you will mark your answers by filling in the circles in your Practice Test Booklet. Make sure you darken the circles completely. Do not make any marks outside of the circles. If you need to change an answer, be sure to erase your first answer completely.

For other questions, you will need to fill in an answer grid. Directions for completing questions with answer grids are provided on the next page.

If a question asks you to show or explain your work, you must do so to receive full credit. Write your response in the space provided. Only responses written within the provided space will be scored.

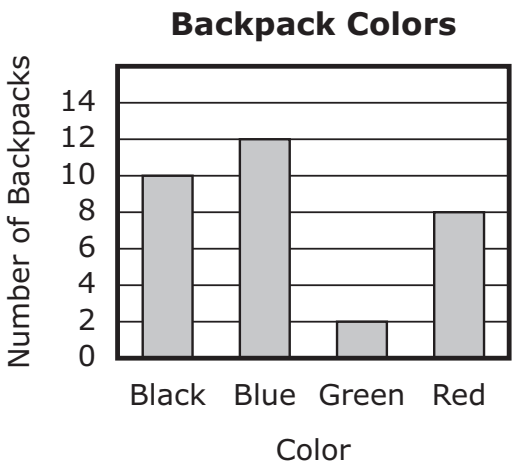
1 A teacher asked a group of students, "What color is your backpack?" The teacher recorded the total numbers for each color in the table shown.

Backpack Colors

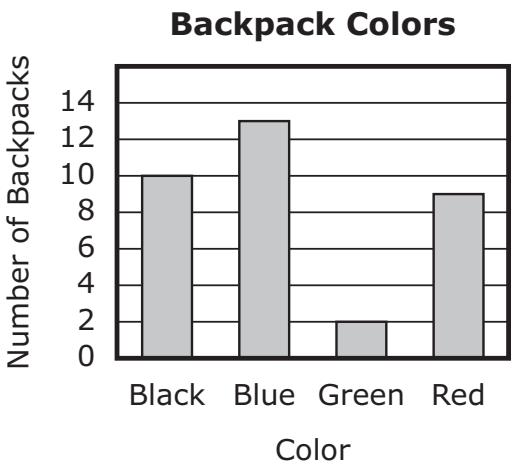
Color	Number of Backpacks
Black	10
Blue	13
Green	2
Red	9

Which of these bar graphs shows the total number for each color in the teacher's table?

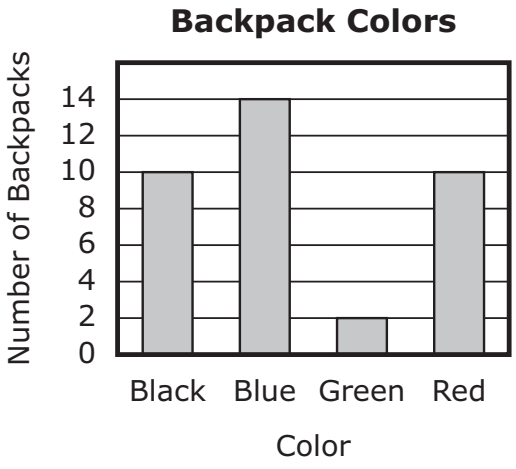
Ⓐ



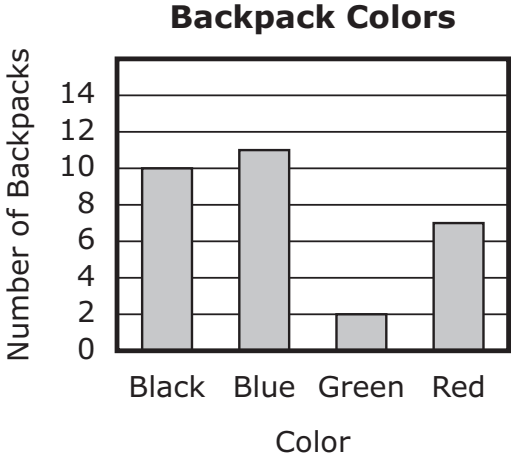
Ⓑ



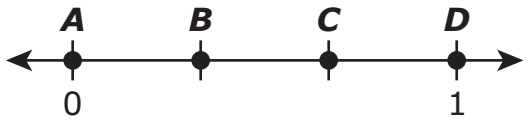
Ⓒ



Ⓓ



2 Which point represents the location of $\frac{2}{3}$ on this number line?



Ⓐ point *A*

Ⓑ point *B*

Ⓒ point *C*

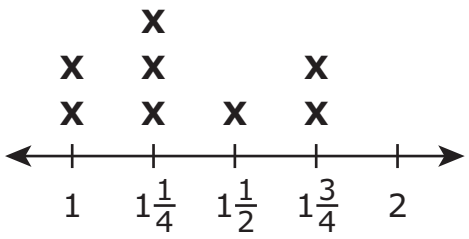
Ⓓ point *D*

3 This list shows the lengths, in inches, of some stickers.

$$1,\ 1\tfrac{1}{2},\ 1\tfrac{3}{4},\ 1\tfrac{3}{4},\ 1\tfrac{1}{4},\ 1\tfrac{1}{4},\ 1,\ 1\tfrac{1}{4}$$

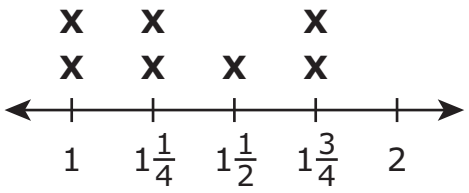
Which line plot shows the number of stickers of each length?

Ⓐ **Sticker Lengths**



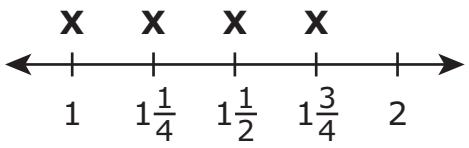
Length (inches)

Ⓑ **Sticker Lengths**



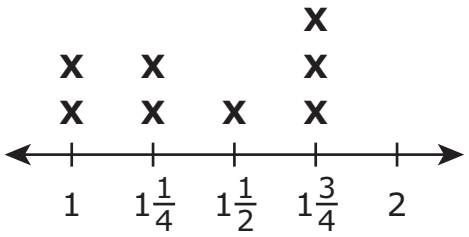
Length (inches)

Ⓒ **Sticker Lengths**



Length (inches)

Ⓓ **Sticker Lengths**



Length (inches)

4 Which of these show a way to find the value of this expression?

$$2 \times 30$$

Select the **two** correct answers.

Ⓐ 2×3

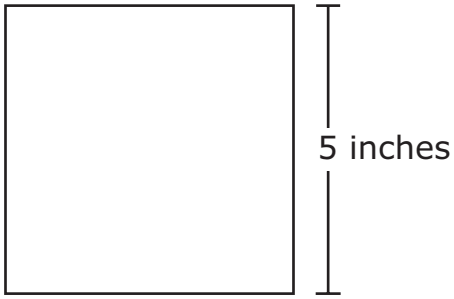
Ⓑ 3×10

Ⓒ $30 + 30$

Ⓓ $2 \times 3 \times 10$

Ⓔ $30 + 30 + 30$

5 A builder is using square tiles to make a design. The design will have an area of 75 square inches. Each tile is the same size. One of the square tiles and its measurement is shown.



Which of these statements about the square tiles are true?

Select the **two** correct answers.

Ⓐ The area of each square tile is 20 square inches.

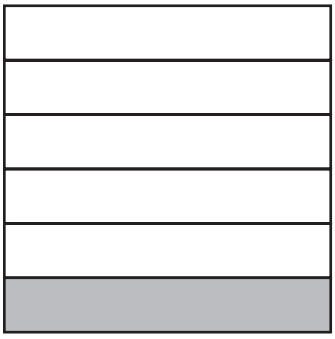
Ⓑ The area of each square tile is 25 square inches.

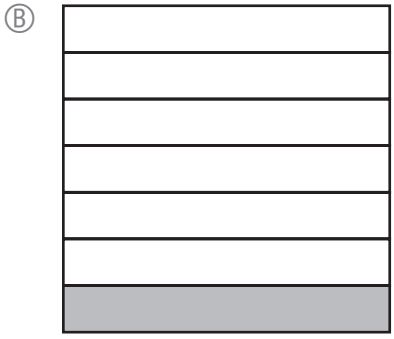
Ⓒ The length of each side of a square tile is 10 inches.

Ⓓ The builder will need 3 of the square tiles to make the design without gaps or overlaps.

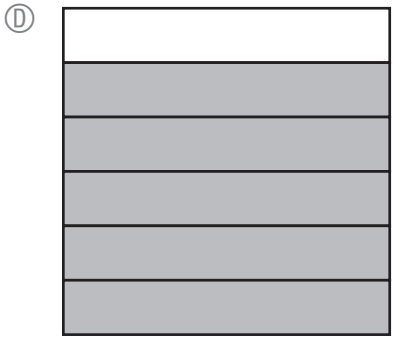
Ⓔ The builder will need 4 of the square tiles to make the design without gaps or overlaps.

6 In which model does the shaded part represent $\frac{1}{6}$ of the area of the figure?

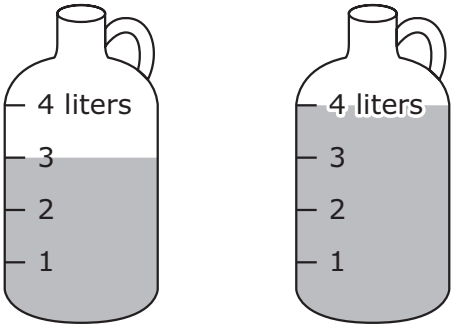
Ⓐ 

Ⓑ 

Ⓒ 

Ⓓ 

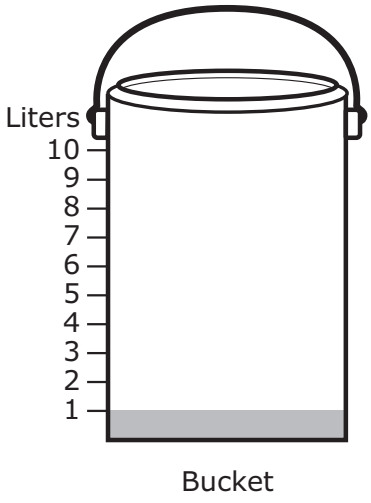
7 A scientist filled two jugs with different amounts of water, as shown.



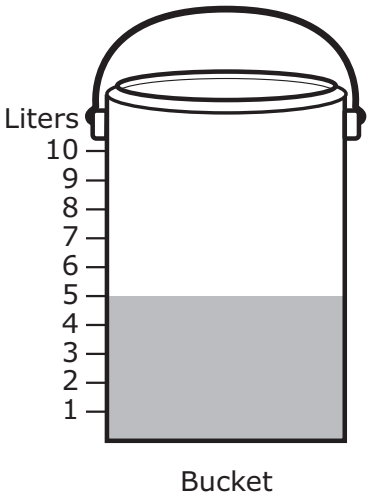
The scientist will pour the water from both jugs into a bucket.

Which of these shows the total amount of water, in liters, that will be in the bucket?

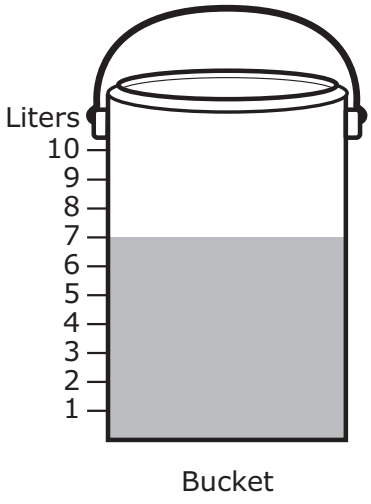
Ⓐ



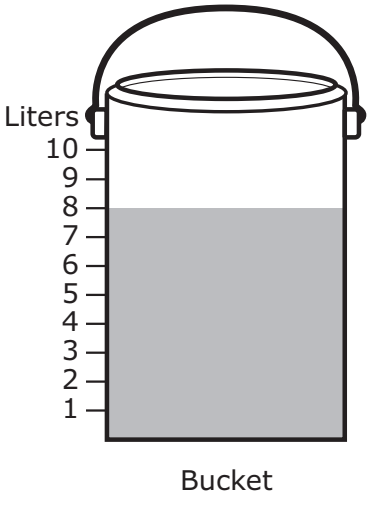
Ⓑ



Ⓒ



Ⓓ



8 A pet store has 5 fish tanks with 10 fish in each tank. A shopper buys 8 fish and takes them home.

After the shopper leaves the store, what is the total number of fish left in the pet store's tanks?

Ⓐ 23

Ⓑ 42

Ⓒ 50

Ⓓ 58

STOP!

Grade 3 Mathematics

SESSION 2

This session contains 8 questions.

*You may **not** use a calculator during this session.* 

Directions

Read each question carefully and then answer it as well as you can. You must record all answers in this Practice Test Booklet.

For some questions, you will mark your answers by filling in the circles in your Practice Test Booklet. Make sure you darken the circles completely. Do not make any marks outside of the circles. If you need to change an answer, be sure to erase your first answer completely.

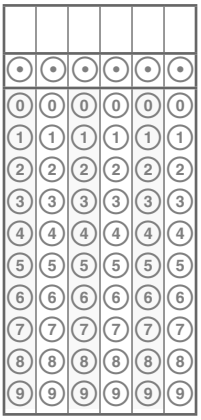
For other questions, you will need to fill in an answer grid. Directions for completing questions with answer grids are provided on the next page.

If a question asks you to show or explain your work, you must do so to receive full credit. Write your response in the space provided. Only responses written within the provided space will be scored.

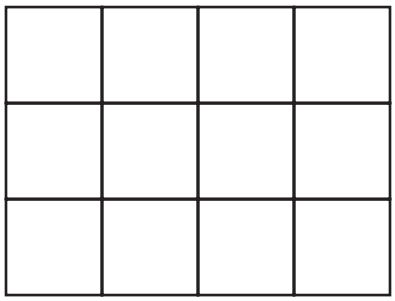
9 Find the quotient.

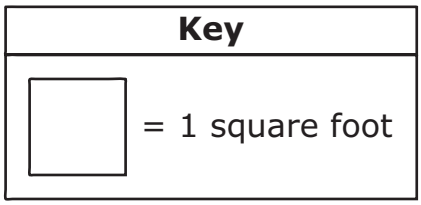
$$42 \div 7$$

Enter your answer in the answer boxes at the top of the answer grid **and** completely fill the matching circles.



10 A closet floor is covered with tiles that each have an area of 1 square foot. The floor is in the shape of a rectangle, as shown.





Which equation can be used to find A, the total area, in square feet, of the floor?

Ⓐ $A = 3 + 4$

Ⓑ $A = 3 - 4$

Ⓒ $A = 3 \times 4$

Ⓓ $A = 3 \div 4$

11 There are 6 children on a bus. Each child is wearing a hat.

What **fraction** of the children on the bus are wearing a hat?

Ⓐ $\frac{1}{6}$

Ⓑ $\frac{2}{6}$

Ⓒ $\frac{5}{6}$

Ⓓ $\frac{6}{6}$

12 This table shows the number of shells collected by four students at the beach last summer.

Shells Collected

Student	Number of Shells
Mary	12
Tim	16
Ethan	8
Kristen	4

Which picture graph shows the number of shells collected by each student at the beach last summer? Be sure to use the key.

Ⓐ **Shells Collected**

Student	Number of Shells
Mary	12
Tim	17
Ethan	7
Kristen	4

KEY
Each shell represents 4 shells.

Ⓑ **Shells Collected**

Student	Number of Shells
Mary	6
Tim	8
Ethan	4
Kristen	2

KEY
Each shell represents 4 shells.

Ⓒ **Shells Collected**

Student	Number of Shells
Mary	3
Tim	4
Ethan	2
Kristen	1

KEY
Each shell represents 4 shells.

Ⓓ **Shells Collected**

Student	Number of Shells
Mary	2
Tim	3
Ethan	2
Kristen	1

KEY
Each shell represents 4 shells.

13 Which of these subtraction problems is solved correctly?

Ⓐ
$$\begin{array}{r} 945 \\ -298 \\ \hline 647 \end{array}$$

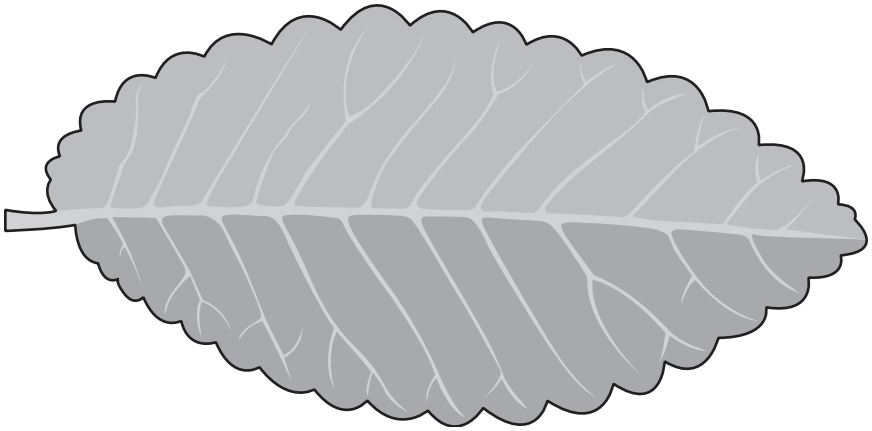
Ⓑ
$$\begin{array}{r} 945 \\ -288 \\ \hline 647 \end{array}$$

Ⓒ
$$\begin{array}{r} 945 \\ -202 \\ \hline 647 \end{array}$$

Ⓓ
$$\begin{array}{r} 945 \\ -292 \\ \hline 647 \end{array}$$

Use your ruler to answer question 14.

14 What is the length, to the nearest one-half inch, of this leaf?



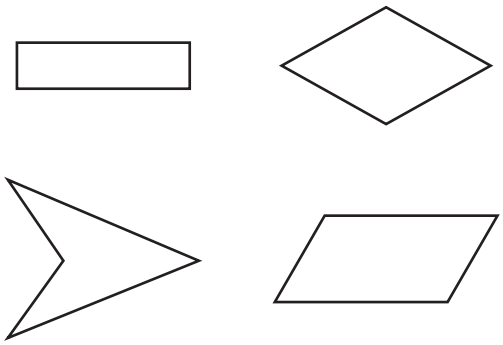
Ⓐ $3\frac{1}{2}$ inches

Ⓑ 4 inches

Ⓒ $4\frac{1}{2}$ inches

Ⓓ 5 inches

15 Mr. Jacobs showed these shapes to his class.



Which word describes **all** of the shapes?

Ⓐ squares

Ⓑ triangles

Ⓒ rectangles

Ⓓ quadrilaterals

This question has three parts.

16 Kevin is cutting oranges and apples into smaller pieces.

Part A

Kevin cuts each orange into fourths. He has already cut 12 fourths.

How many oranges has Kevin cut so far? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

Part B

Altogether, Kevin will have cut 8 oranges into fourths.

How many fourths will Kevin have cut in all? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

Part C

Kevin has 8 apples. He will cut each apple into sixths.

Will Kevin have more orange pieces or apple pieces? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

STOP!

Grade 3 Mathematics Paper-Based Practice Test Answer Key

The following pages include the answer key for all machine-scored items, followed by rubrics for the hand-scored items. The rubrics also show sample student responses; other valid methods for solving the problem can earn full credit unless a specific method is required by the item. In items where the scores are awarded for full and partial credit, students can still earn points for reasoning or modeling even if they make a computation error.

Session 1

Item Number	Item Type	Answer Key	Number of Points	Standard
1	SR	B	1	3.MD.B.3
2	SR	C	1	3.NF.A.2
3	SR	A	1	3.MD.B.4
4	SR	C, D	1	3.OA.B.5
5	SR	B, D	1	3.MD.C.5
6	SR	A	1	3.G.A.2
7	SR	C	1	3.MD.A.2
8	SR	B	1	3.OA.D.8

Session 2

Item Number	Item Type	Answer Key	Number of Points	Standard
9	SA	6	1	3.OA.C.7
10	SR	C	1	3.MD.C.7
11	SR	D	1	3.NF.A.3
12	SR	C	1	3.MD.B.3
13	SR	A	1	3.NBT.A.2
14	SR	C	1	3.MD.B.4
15	SR	D	1	3.G.A.1
16	CR	*See Rubric*	3	3.NF.A.1

Rubric is on the next page.

Scoring Rubric for Grade 3 Practice Test **Session 2 Item #16**

Scoring Guide	
Score	Description
3	The student response demonstrates an exemplary understanding of the Numbers and Operations - Fractions concepts involved in understanding a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts and understanding a fraction *a*/ *b* as the quantity formed by *a* parts of size 1/ *b*. Given a number of fractional parts, the student correctly determines the number of wholes and, given a number of wholes, the student correctly determines the number of fractional parts.
2	The student response demonstrates a good understanding of the Numbers and Operations - Fractions concepts involved in understanding a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts and understanding a fraction a/b as the quantity formed by a parts of size 1/b. Although there is significant evidence that the student was able to recognize and apply the concepts involved, some aspect of the response is flawed. As a result, the response merits 2 points.
1	The student response demonstrates a minimal understanding of the Number and Operations - Fractions concepts involved in understanding a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts and understanding a fraction *a*/ *b* as the quantity formed by *a* parts of size 1/ *b*. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 1 point.
0	The student response contains insufficient evidence of an understanding of Number and Operations - Fractions concepts involved in understanding a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts and understanding a fraction *a*/ *b* as the quantity formed by *a* parts of size 1/ *b* to merit any points.

Sample Response:

A. 3 (oranges); There are 4 fourths for each orange. $4 + 4 + 4 = 12$

B. 32 (fourths); Each orange has 4 fourths. $8 \times 4 = 32$

C. Apple sixths; $8 \times 6 = 48$; $48 > 32$