Ministry of Education, Skills, Youth & Information

trend
TRANSFORMING EDUCATION FOR NATIONAL DEVELOPMENT

Grade 6

Test Preparation Publication

Curriculum Based Test

$x^2 + 5 = 12$

Mathematics

$V = \pi r^2 h$

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Grade 6 Test Preparation Publication Curriculum Based Test Mathematics

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About the Test Preparation Publication

The Ministry of Education, Skills, Youth & Information, through the Exam & Assessment Administration Services Branch, is pleased to provide this **Test Preparation Publication** to support teachers in preparing students for the **Primary Exit Profile (PEP) Mathematics Curriculum Based Test (CBT)**. This resource has been created to help you guide your students as they build strong mathematics knowledge, skills and competencies to solve real world problems. It is intended to make test preparation more meaningful and less stressful for both you and your students by providing sample items, assessment tips and strategies that align with the PEP assessment standards.

The full Grade 6 Mathematics Curriculum Based Test comprises **40 single select multiple-choice items** that assess students' knowledge and application of mathematical concepts and procedures, students' ability to solve problems, students' ability to use mathematical models and analyze data and their ability to communicate their mathematical reasoning. The test samples Mathematics objectives covered in the Grade 6 National Standards Curriculum **up to Term 2, Unit 2**. This publication contains 40 items that reflect the types of questions, formats, and cognitive demands found in the official assessment.

In addition to the sample items, the publication provides the **answer key** and **strategies** that can be used post administration to help support students. This resource is intended to help teachers understand the underlying skills being measured and to guide instructional planning.

Teachers can use this publication to:

- Familiarize students with the **structure and expectations** of the PEP Mathematics CBT.
- Provide **practice opportunities** that build confidence and test-taking strategies.
- Identify **areas of strength and weakness** in students' mathematics skills and competencies.
- Facilitate **discussion and reflection** on how to approach different items effectively.

Ultimately, this test preparation resource serves as a **practical classroom tool** to enhance mathematics instruction and improve students' readiness and performance in the national standardized assessment.

How to administer the test items?

Before administration, teachers should be guided by the following:

1. This publication consists of 40 single select multiple choice mathematics items.
2. Teachers can choose to administer the items as a full 40-item test or in smaller blocks of items.
3. Students should do the test items in a calm yet formal atmosphere. It is important to recreate the conditions of the real test as close as possible.
4. For the full 60 item Curriculum Based Test (which includes 20 numeracy items), students will have 1 hour and 50 minutes to complete it. Therefore, for this 40-item test, students should complete it in 80 minutes.
5. On average, students will have two minutes to answer each question, with additional minutes for reading item information and other stimulus material.
6. In light of this, encourage students to move on from questions they are stuck on. The student may find it helpful to put a mark in pencil (such as a cross or asterisk), beside questions that they have left out, so that they can be easily spotted when they go through again.
7. Remind students that they can always go back through the paper, if they have time left.
8. When the time is up, they should stop working. If they have not finished, draw a line at the point where the student has reached. You can always allow them to continue at another time to get the practice.

What to do after administration?

It is recommended that teachers do the following after administration of the full test or blocks of items:

1. Use the Answer Keys, provided on pages 25-26, to mark each student's responses.
2. Go through the students' responses and guide them through the process of determining the correct answer. Use strategies such as:
    a. have students underline the key words
    b. remind students to read through all options carefully, before making a selection
    c. eliminating the wrong answers
    d. going back to the stimulus material to check for key information
3. Note instances where students got the responses to the item incorrect and use this to identify gaps in students' knowledge and/or of the concept.
4. Emphasise the engagement of the students by asking probing questions which will inform the students' response to the items. You can ask questions such as:
    - What do you think is the answer?
    - How did you get to your answer?
    - Can you explain some more?
    - What other questions do you have?
5. Have students think about how they completed the items in the time given. They should tell you whether they need to work more carefully or if they should try to use the time better, depending on how they completed the items.
6. It is important to discuss with students the layout of different items and how they should approach these.

Test Items

Instructions: There are 40 items on this test. Each has only one (1) correct answer. Read each item carefully then select the correct response.

The expanded form of a number is shown below. Use it to answer item 1.

$(2 \times 1000) + (9 \times 100) + (5 \times 10) + (6 \times 1)$

1. Which represents the number in standard form?

A. 2 000 900 506

B. 290 056

C. 29 056

D. 2 956

2. Which name **CORRECTLY** represents the number 524?

A. five hundred forty two

B. five hundred twenty four

C. two hundred fifty four

D. four hundred twenty five

The diagrams below show two fractions, $\frac{2}{9}$ and $\frac{5}{9}$. Use them to answer item 3.

3. Determine the value of $\frac{2}{9} + \frac{5}{9}$.

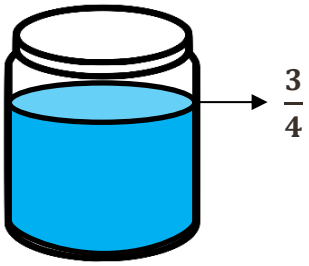
A. $\frac{3}{9}$

B. $\frac{7}{9}$

C. $\frac{7}{18}$

D. $\frac{10}{18}$

The diagram below shows a jar with some liquid. Use it to answer item 4.



4. What percentage **BEST** represents the amount of liquid in the jar?

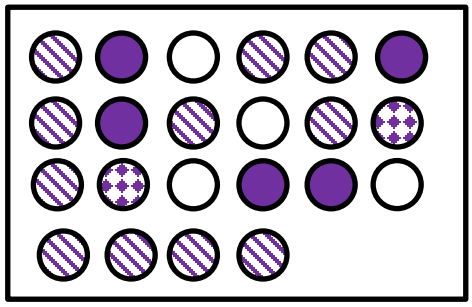
A. 25%

B. 34%

C. 50%

D. 75%

Examine the set of marbles below. Use it to answer item 5.



5. Which marble represents 50% of the set?

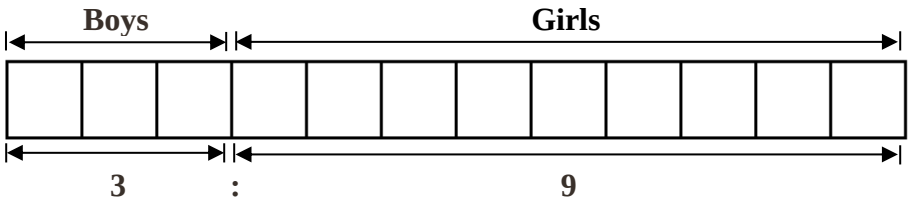
A. 

B. 

C. 

D. 

The diagram below shows the ratio of the number of boys to the number of girls in a club as 3 : 9. Use the information to answer item 6.



6. What percentage of the students are girls?

A. 90%

B. 75%

C. 30%

D. 25%

7. Which of the following ratios is equivalent to 2 : 3?

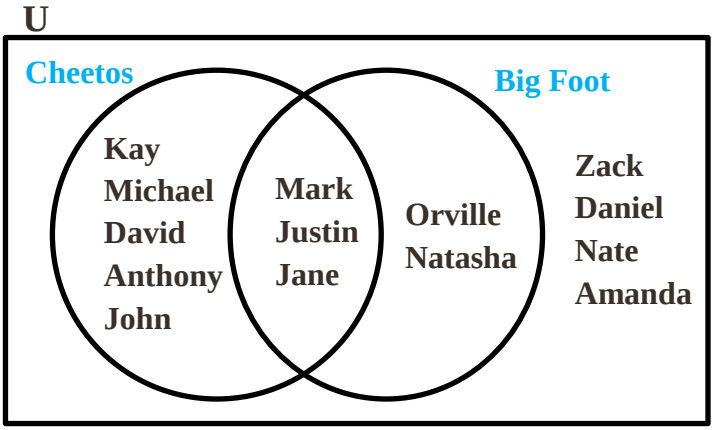
A. 5 : 10

B. 5 : 15

C. 10 : 15

D. 10 : 25

The Venn diagram below shows the snack that some children prefer. Use it to answer item 8.



8. Which students like both Cheetos and Big Foot?

A. {Orville, Natasha}

B. {Mark, Justin, Jane}

C. {Amanda, Nate, Zack, Daniel}

D. {Kay, Michael, David, Anthony, John, Mark, Justin, Jane, Orville, Natasha}

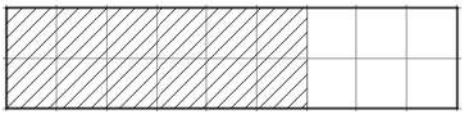
Examine sets X, Y and Z below. Use the information to answer item 9.

X = {1, 3, 8}
Y = {1, 2, 4, 8}
Z = {1, 3, 5, 7, 9}

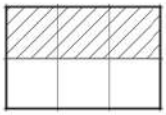
9. Which of the following describes set **Y**?

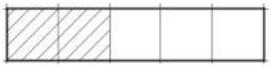
A. factors of 2
B. factors of 8
C. multiples of 2
D. multiples of 8

10. Which diagram shows the ratio of shaded to un-shaded parts as 2 : 1?

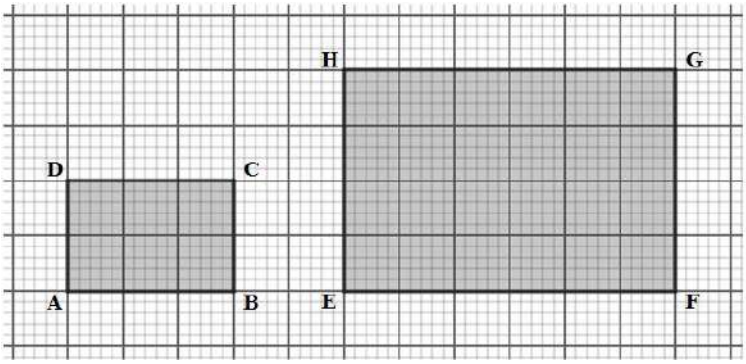
A. 

B. 

C. 

D. 

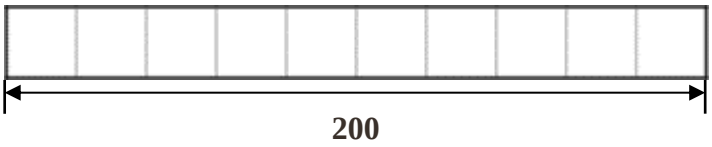
The diagram below shows two similar rectangles. Use it to answer item 11.



11. What is the ratio of side AB to EF?

A. 2 : 1
B. 2 : 3
C. 1 : 2
D. 3 : 2

The diagram below represents the number 200. Use it to answer item 12.



12. What is 80% of the number?

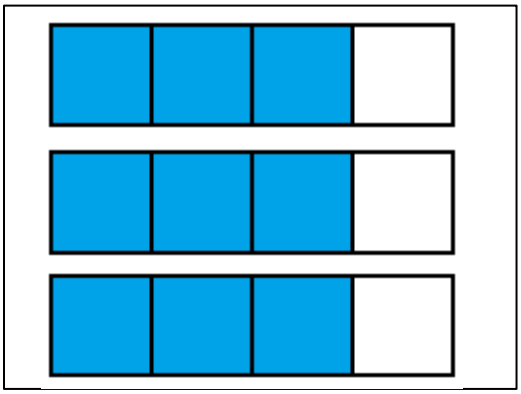
A. 20

B. 40

C. 160

D. 180

Examine the diagram below. Use it to answer item 13.



13. Which of the following shows how to calculate the total area that is **SHADED**?

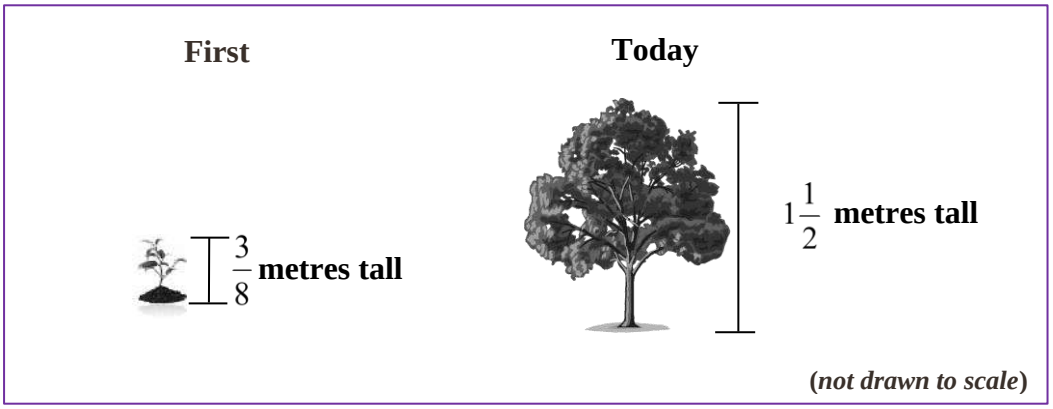
A. $\frac{3}{4} \times 3 = \frac{9}{4}$

B. $\frac{3}{4} \times 4 = \frac{12}{4}$

C. $\frac{1}{3} \times 4 = \frac{4}{3}$

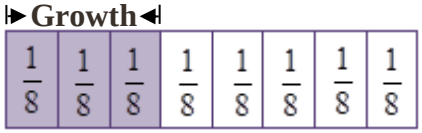
D. $\frac{1}{4} \times 3 = \frac{3}{4}$

The diagram below shows how much a tree that was planted has grown over a period of time. Use it to answer item 14.

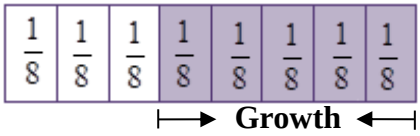


14. In which model does the shaded area correctly represent how much the tree has grown?

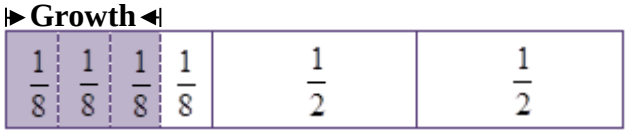
A.



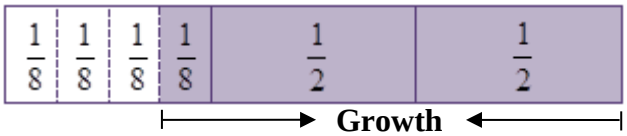
B.



C.



D.



Examine the bar and the information given about the bar below.

- **The bar is divided into 15 equal parts**
- **The bar represents 100% of a number**
- **The shaded part of the bar represents 20**
- **Twenty is 40% of the number**

Use the bar and the information given about the bar to answer item 15.

15. Which number represents **100%** of the bar?

A. 60
B. 50
C. 40
D. 15

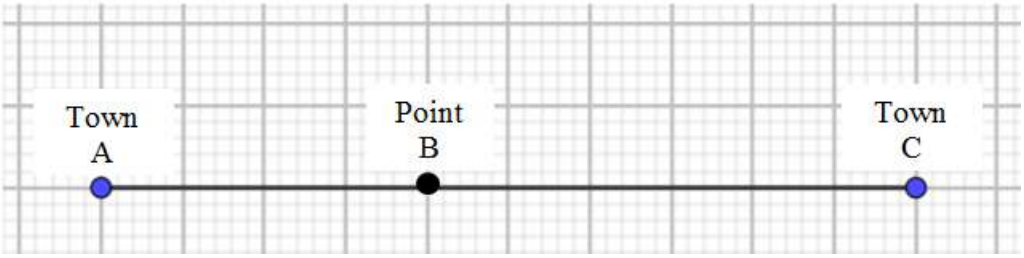
The table below shows the amount of milk, in litres, needed to make different products. Use the information in the table to answer item 16.

Product	Bun	Cookie	Cake	Cheese	Yogurt	Pancake
Amount of milk (litres)	$1\frac{3}{4}$	$\frac{1}{3}$	**2**	$2\frac{1}{2}$	$3\frac{1}{3}$	$\frac{1}{4}$

16. Which three products will require exactly **4 litres** of milk altogether?

A. Cheese, Yogurt, and Bun
B. Cookie, Pancake, and Cheese
C. Pancake, Bun, and Cake
D. Yogurt, Cookie, and Cake

The diagram below represents the distances between Town A, Point B and Town C. Peter travelled in a straight line from Town A to Town C. Use it to answer item 17.



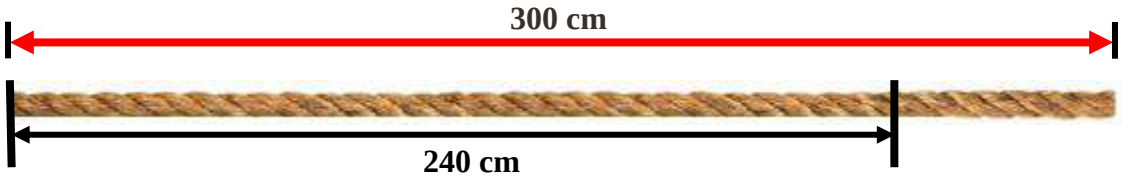
17. Peter stopped at point B. What percentage of the journey did he cover?

A. 4%
B. 20%
C. 40%
D. 60%

18. Fifty (50) sweets were shared between John and Mark in the ratio of 1 : 4 respectively. What was Mark's share?

A. 40 sweets
B. 30 sweets
C. 10 sweets
D. 5 sweets

Examine the rope below. It measures 300 cm. Use it to answer item 19.



(not drawn to scale)

19. A piece of the rope, which measures 240 cm, was used to tie a box. What percentage of the rope was used to tie the box?

A. 10 %
B. 20 %
C. 60 %
D. 80 %

The three tables below show 3 classes: Class A, Class B and Class C. The number of girls in each class is shown, as well as the percentage of girls in each class. Use the information given in each table to answer item 20.

CLASS A		
Number of Girls	**Percentage of Girls**	**Total Number of Students in Class**
8 Girls	**50% of the class**	**?**

CLASS B		
Number of Girls	**Percentage of Girls**	**Total Number of Students in Class**
8 Girls	**40% of the class**	**?**

CLASS C		
Number of Girls	**Percentage of Girls**	**Total Number of Students in Class**
8 Girls	**20% of the class**	**40**

20. Which statement is **TRUE**?

A. Class A has more students than Class B.

B. Class B has more students than Class C.

C. Class C has more students than Class A.

D. Each class has 40 students.

21. Which problem can be solved by adding $\frac{1}{2}$ and $\frac{1}{3}$?

A. Jake puts $\frac{1}{2}$ of his pencils into an empty bag. He then puts another $\frac{1}{3}$ of his pencils into the same bag. What fraction of his pencils are now in the bag?

B. Jake puts $\frac{1}{2}$ of his pencils into his desk. He then gives $\frac{1}{3}$ of the pencils in his desk to Lacy. What fraction of Jake's pencils did Lacy receive?

C. Jake gives $\frac{1}{2}$ of his pencils to Bill and some of his pencils to Kimmy. What fraction of his pencils did he give to Kimmy, if he now has $\frac{1}{3}$ remaining

D. Jake gives $\frac{1}{2}$ of his pencils to Jill and $\frac{1}{3}$ of the remainder to Bill. What fraction of his pencils does he have left?

Five numbers are shown in the box below. The value of the digit 2 is less than one thousand in each of the numbers in the box. Examine the numbers carefully then answer item 22.

4 **2**39	31 4**2**9	46 5**2**3	6**2**4	3 494 70**2**

22. For which of the following is the value of the **digit 2** also less than one thousand?

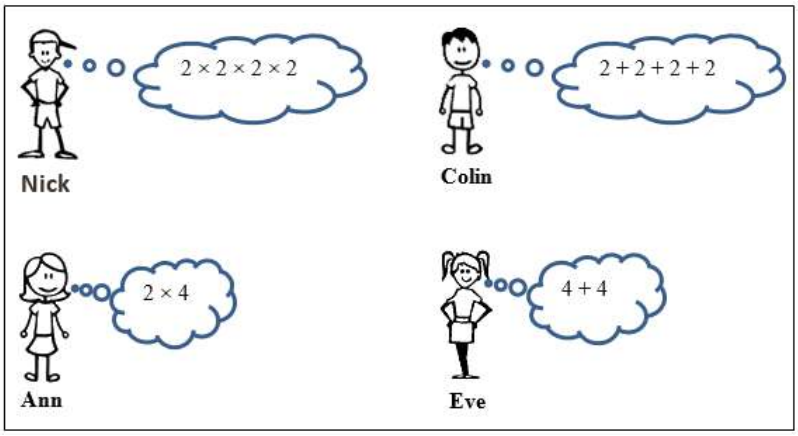
A. 1 234

B. 42 936

C. 329 463

D. 5 249 310

Four students were asked to determine the value of 2^4. Their calculations are shown in the box below. Use the calculations to answer item 23.



23. Which student's calculation is **CORRECT**?

A. Ann
B. Colin
C. Eve
D. Nick

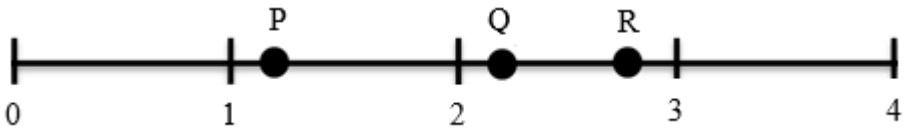
Read the statement below carefully. Use it to answer item 24.

"There is no number greater than 5.69 that has 6 in the tenths place."

24. Which of the following shows that the statement is **FALSE**?

	Ones		Tenths	Hundredths	Thousandths
A.	5	.	6	0	0
B.	5	.	6	8	1
C.	5	.	6	9	0
D.	5	.	6	9	1

The line segment below represents 4 wholes. Mario correctly selected point Q to represent an estimation of 220% on the line segment. Use it to answer item 25.



25. Which of the following **could not** be his reason for choosing this point?

A. 220% is just a little over 2 wholes.

B. Any random point between 2 and 3 would be correct.

C. Point P is too close to 1 and Point R is too close to 3.

D. Point Q is approximately 1/5 the way between 2 and 3, which is 20% more.

Examine the conversation shown below between Mark and Ariel about the ratio 1 : 5. Use it to answer item 26.

Mark: **The ratio of boys to girls in our school is 1 : 5.**

Ariel: **Ok, that means that the fraction of boys in our school is $\frac{1}{5}$.**

Mark: **You are wrong!**

26. Which of the following should Ariel have known about the ratio 1 : 5?
The fraction of boys in the school is _____.

A. $\frac{1}{6}$ because it is 1 out of 6 equal parts

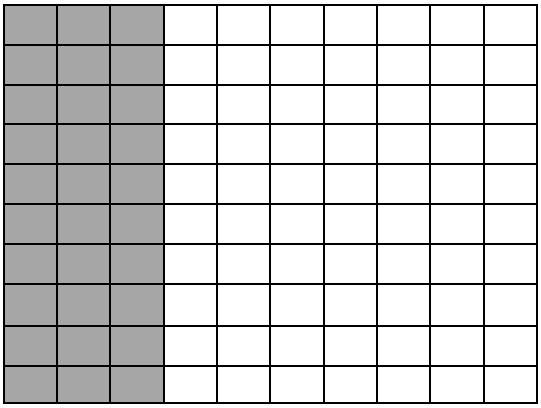
B. $\frac{5}{6}$ because it is 5 out of 6 equal parts

C. $\frac{6}{1}$ because it is 6 out of 1 equal parts

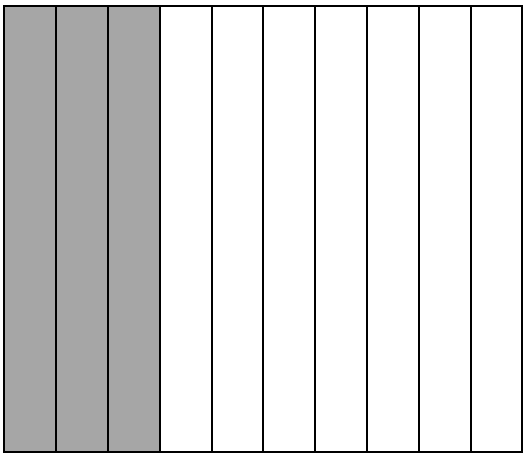
D. $\frac{6}{5}$ because it is 6 out of 5 equal parts

Four students in a class were given the following grids and asked to write about the portion of each grid that is shaded. Use the grids, as well as each student's response, to answer item 27.

Grid M



Grid N



Students' Responses:

Alex: ***"0.3 of grid M is shaded and 0.3 of grid N is shaded."***

Jen: ***"0.03 of grid M is shaded and 0.3 of grid N is shaded."***

Leo: ***"0.3 of the grid M is shaded and 0.03 of grid N is shaded."***

Milton: ***"0.003 of the grid M is shaded and 0.03 of grid N is shaded."***

27. Which student's response about the grids is **CORRECT**?

A. Alex

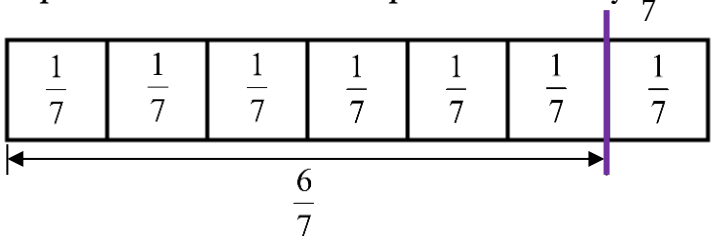
B. Jen

C. Leo

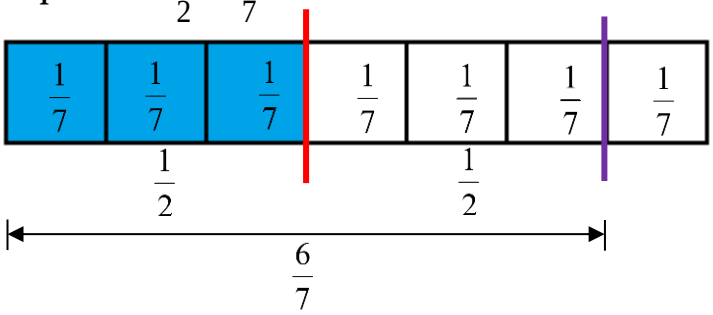
D. Milton

Jenny is solving $\frac{1}{2}\times\frac{6}{7}$. The diagrams below show the steps that she took to solve the problem. Use it to answer item 28.

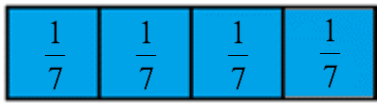
Step 1: Divide a whole into 7 parts and identify $\frac{6}{7}$



Step 2: Find $\frac{1}{2}$ of $\frac{6}{7}$



Step 3: Add the number of sevenths in $\frac{1}{2}$ of $\frac{6}{7}$



$$\frac{1}{7}+\frac{1}{7}+\frac{1}{7}+\frac{1}{7} = \frac{4}{7}$$

Step 4: Solution $\frac{1}{2}\times\frac{6}{7}=\frac{4}{7}$

28. Where did Jenny make the error?

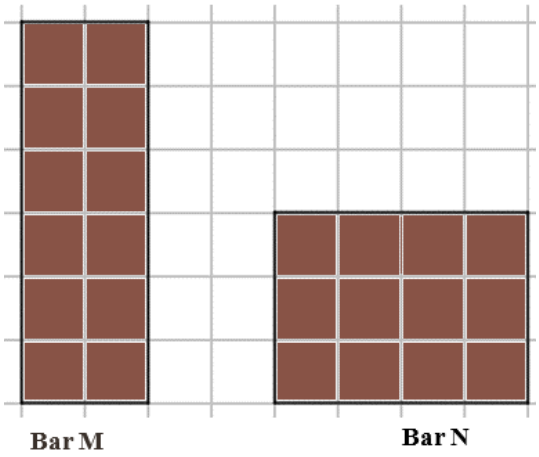
A. Step 1: in the representation of $\frac{6}{7}$

B. Step 2: in the representation of $\frac{1}{2}$ of $\frac{6}{7}$

C. Step 2: in the representation of $\frac{6}{7}$

D. Step 3: in the representation of $\frac{1}{2}$ of $\frac{6}{7}$

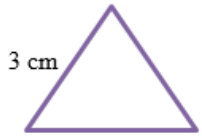
The diagram below represents two bars of chocolate. Use the diagram to answer item 29.



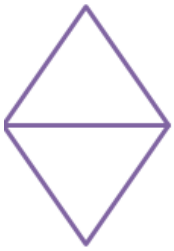
29. Both chocolate bars are equal in thickness. Which statement is **TRUE** about the chocolate bars?

A. Bar M has more pieces of chocolate than Bar N
B. Bar N has more pieces of chocolate than Bar M
C. Both bars have the same number of pieces of chocolate
D. Bar N has twice the number of pieces of chocolate as Bar M

Examine the equilateral triangle below. Its perimeter is 9 cm.



Two of these triangles are placed together to make a new shape as shown below. Use them to answer item 30.



30. Which of the following is the perimeter of the new shape?

A. 6 cm
B. 9 cm
C. 12 cm
D. 15 cm

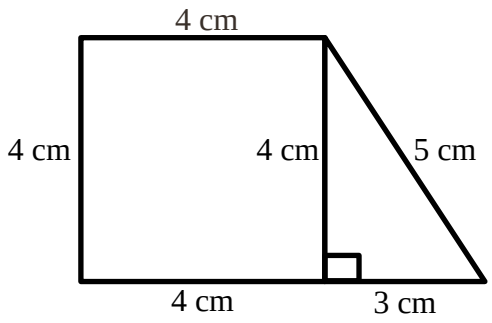
Mary is travelling from Montego Bay to Kingston by bus. The bus schedule is given below. Use it to answer item 31.

	Time (hours)						
Departure City: Montego Bay	**06:00**	**07:00**	**09:00**	**11:00**	**14:00**	**15:00**	**17:00**
Arrival City: Kingston	**10:00**	**11:00**	**13:00**	**15:00**	**18:00**	**19:00**	**21:00**

31. Mary has an appointment in Kingston at 15:30 hours. She wants to arrive in Kingston at least an hour before the appointment. What is the latest possible time that she should leave Montego Bay?

A. 9:00 a.m.
B. 11:00 a.m.
C. 1:00 p.m.
D. 3:00 p.m.

The table below shows a shape (*not drawn to scale*), and the explanation two students gave about its perimeter. Use the shape and the explanations to answer item 32.

Shape	Explanation
	**Student 1: "To find the perimeter of the shape add all the length of the sides along the boundary of the shape."** **Student 2: "To find the perimeter of the shape add up all the numbers shown on the shape."**

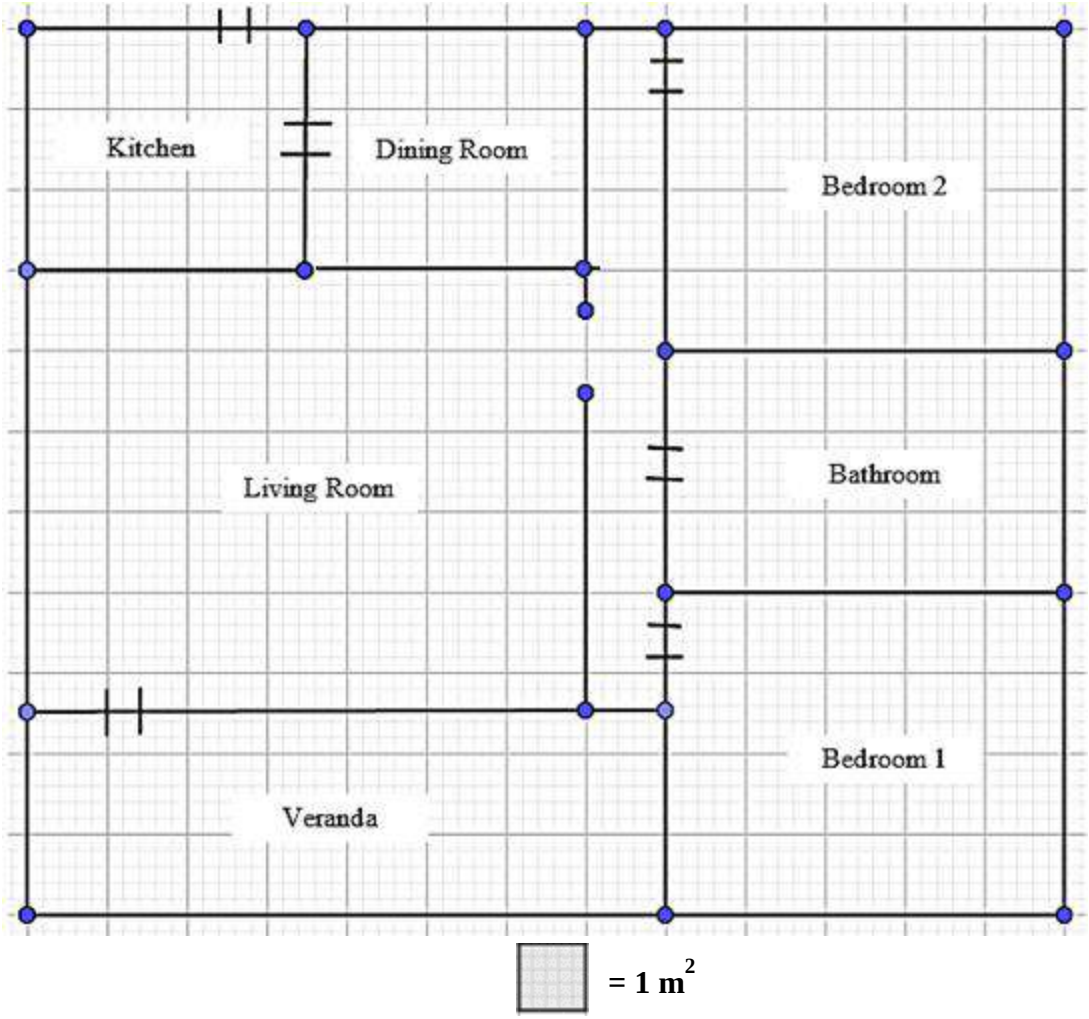
32. Which student's statement is **CORRECT**?

A. Only Student 1 is correct.
B. Only Student 2 is correct.
C. Neither Student 1 nor Student 2 is correct.
D. Both Student 1 and Student 2 are correct.

33. A cuboid shaped cardboard box has a volume of 4800 cm^3. The height of the box is 20 cm. Which of the following could be the length and the width of the box?

A. length = 40 cm, width = 20 cm
B. length = 60 cm, width = 20 cm
C. length = 15 cm, width = 8 cm
D. length = 15 cm, width = 16 cm

The scale drawing of a floor plan is shown below. Use it to answer item 34.



34. Which of the following is a reasonable estimate of the area of the living room?

A. 20 m^2

B. 24 m^2

C. 40 m^2

D. 72 m^2

Examine the mathematical statement below. Use it to answer item 35.

$$8 \blacklozenge 6 < 2$$

35. Which of the following, when used to replace the "$\blacklozenge$", would make the statement **TRUE**?

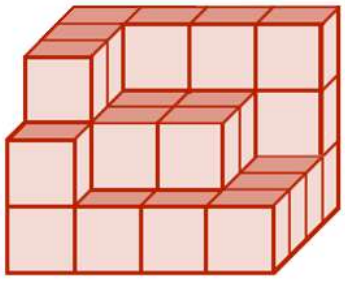
A. $+$
B. $-$
C. $\div$
D. $\times$

36. Which pair of numbers when inserted in the boxes labelled ***m*** and ***n*** will produce a sum that is less than 1?

$$\frac{\boxed{m}}{5} + \frac{3}{\boxed{n}}$$

A. $m = 1$ and $n = 3$
B. $m = 2$ and $n = 5$
C. $m = 5$ and $n = 3$
D. $m = 1$ and $n = 4$

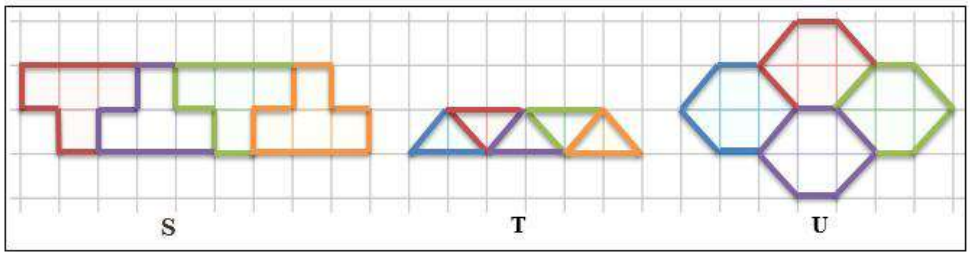
A group of students is using some unit cubes to make a large cuboid. The diagram below shows how far they have reached. When completed, the cuboid will be 4 unit cubes in length, 4 unit cubes in width, and 3 unit cubes in height. Use this information to answer item 37.

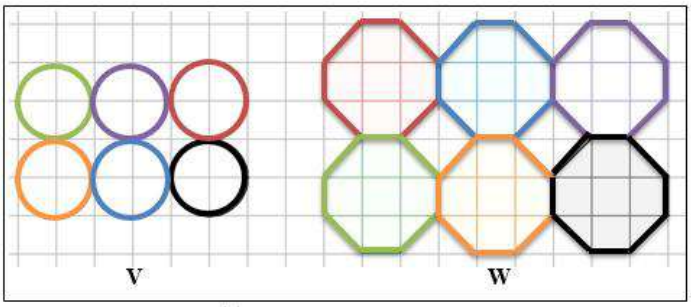


37. About how many more unit cubes are needed to complete the large cuboid?

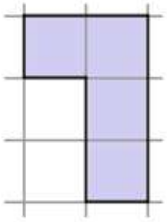
A. 10
B. 15
C. 18
D. 20

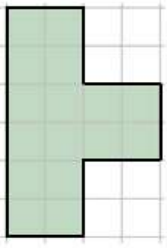
The shapes used in diagram S, T and U make good floor tiles because they fit together as is, without leaving spaces. The shapes used in diagram V and W do NOT make good floor tiles. Examine the shapes carefully then use them to answer item 38.

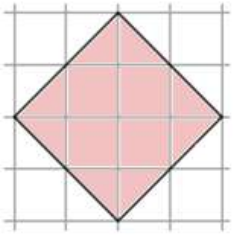


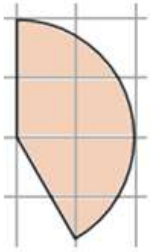


38. Which of these shapes will **NOT** make a good floor tile?

A. 

C. 

B. 

D. 

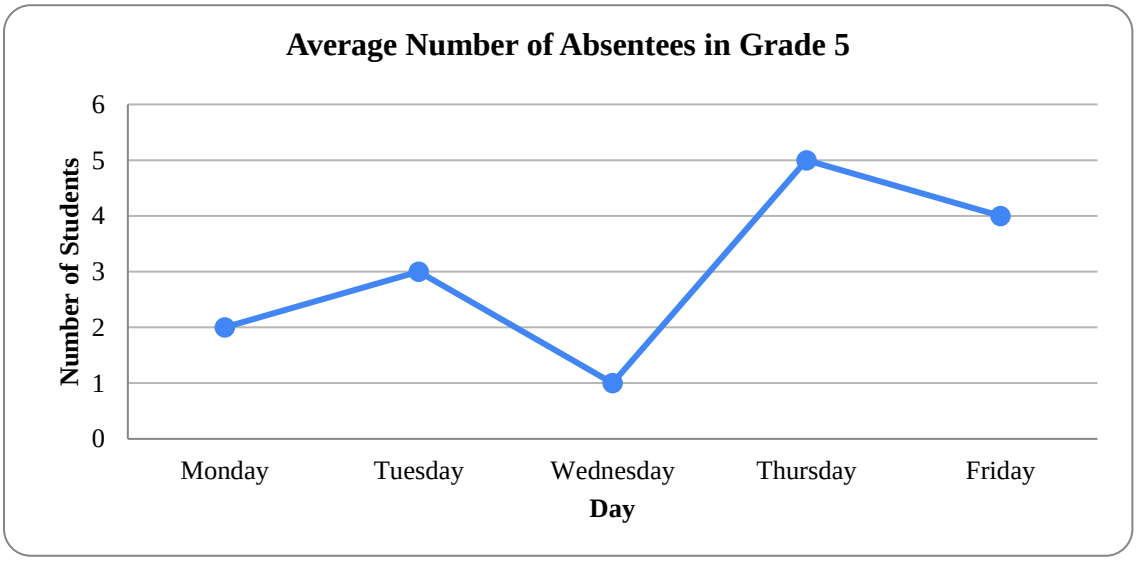
The table below shows the ages, in years, of the people at Susan's 18th birthday party. Use it to answer item 39.

Stem	Leaf
0	**5, 8, 8, 8**
1	**1, 1, 1, 1, 2, 2, 3, 3, 3, 4, 5, 5, 8**
2	**8**
3	**0, 3, 6**

39. How many people at the party were older than Susan?

A. 3
B. 4
C. 13
D. 16

The line graph below shows the average number of students absent from grade 5 over a six-week period. Use it to answer item 40.



40. On which day of the week are all grade 5 students **most likely** to be at school?

A. Monday
B. Wednesday
C. Thursday
D. Friday

Answer Keys

Item	Content Category	Key	Item Description Students are required to:
1	Number	D	identify the standard form of the number given
2	Number	B	write the numeral for a number given
3	Number	B	use the models of two fractions to find their sum
4	Number	D	convert a fraction to a percentage
5	Number	A	calculate 50% of a set of marbles and to then find the marble type that represents this amount
6	Number	B	calculate the percentage of one part of a ratio given.
7	Number	C	identify the equivalent ratio for a ratio given
8	Number	B	list the members in the intersection of the two sets given
9	Number	B	describe the elements of a set
10	Number	A	identify the equivalent ratio for the ratio given
11	Number	C	use their knowledge of ratio to compare the length of each corresponding side of two rectangles given
12	Number	C	use a representation of a number to determine what amount would be a given percentage of the number
13	Number	A	use models of fractions to determine how to find the area of the models shaded
14	Number	D	identify a model that represents the difference between two fractions given
15	Number	B	calculate the value of a number when only a percentage of the number is known
16	Number	C	add three fractions to result in a sum given
17	Number	C	determine the percentage of a distance given
18	Number	A	use the ratio and the total amount given to determine the total share of one part of the ratio
19	Number	D	tell the percentage of a given amount of a total
20	Number	C	examine three tables of information and to determine which of four statements given about the information presented is true
21	Number	A	examine four options and to determine which option can be solved by adding the two fractions given
22	Number	A	read a statement about a group of numbers and to select a number that also meets the criteria
23	Number	D	examine four examples about the exponent of a number and determine which is correct

Answer Keys

Item	Content Category	Key	Item Description Students are required to:
24	Number	D	read a preposition made about place value and to find a specific example that also refutes this claim
25	Number	B	use their knowledge of fraction and percentage to find a reason that would not support an estimation given
26	Number	A	read two conjectures made about ratios and to find a specific example that corrects an incorrect statement made
27	Number	A	examine the models of two decimals and to identify a statement that is true about them
28	Number	D	identify the error made in a multi-step solution given, involving multiplication of two fractions
29	Measurement	C	compare the area of two rectangular regions
30	Measurement	C	calculate the perimeter of a quadrilateral when one side is known
31	Measurement	A	use the departure and arrival times of a bus to determine the latest time that a bus can leave, in order to arrive at its destination at a time specified
32	Measurement	A	examine two statements made about finding the perimeter of a compound shape and to determine which is true
33	Measurement	D	determine the length and width of a rectangular prism given its volume and its height
34	Measurement	C	count the number of squares given in one room of a floor plan in order to estimate its area
35	Algebra	C	examine a mathematical sentence and to determine which operation would make it true
36	Algebra	D	determine which two numbers would make the sum of two fractions less than one
37	Geometry	B	determine how many more unit cubes are needed to complete a large cuboid
38	Geometry	D	identify a shape will not overlap if used to tile a floor
39	Statistics	B	interpret a stem and leaf graph in order to identify the number of values larger than a given amount
40	Statistics	B	interpret the information given on a line graph in order to answer a question given within its context

Primary Exit Profile

Bringing Abilities to Light

Grade 6 Test Preparation Publication