Released Items
2010
Achievement Test

Knowledge and Employability
Mathematics

GRADE 9

Government of Alberta ■

Alberta

Freedom To Create. Spirit To Achieve.

This document contains released items from the 2010 Grade 9 Knowledge and Employability Mathematics Achievement Test.

A test blueprint and an answer key that includes the difficulty, reporting category, curricular content area, and item description for each test item are also included. These materials, along with the *Program of Studies* and subject bulletin, provide information that can be used to inform instructional practice.

For further information, contact

Ray Shapka, Knowledge and Employability Examination Manager, at
Ray.Shapka@gov.ab.ca; or

Darren Lux, Knowledge and Employability Examiner, at
Darren.Lux@gov.ab.ca; or

Ken Marcellus, Director, Achievement Testing, at
Ken.Marcellus@gov.ab.ca; or

Learner Assessment, (780) 427-0010.
To call toll-free from outside Edmonton, dial 310-0000.

The Alberta Education Internet address is education.alberta.ca.

2010 Achievement Test Released Items

The items presented in this document are from the secured 2010 Grade 9 Knowledge and Employability Mathematics Achievement Test. These items are released by Alberta Education.
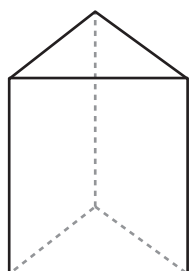
Grade 9 Knowledge and Employability Mathematics Achievement Test
Released Items 2010
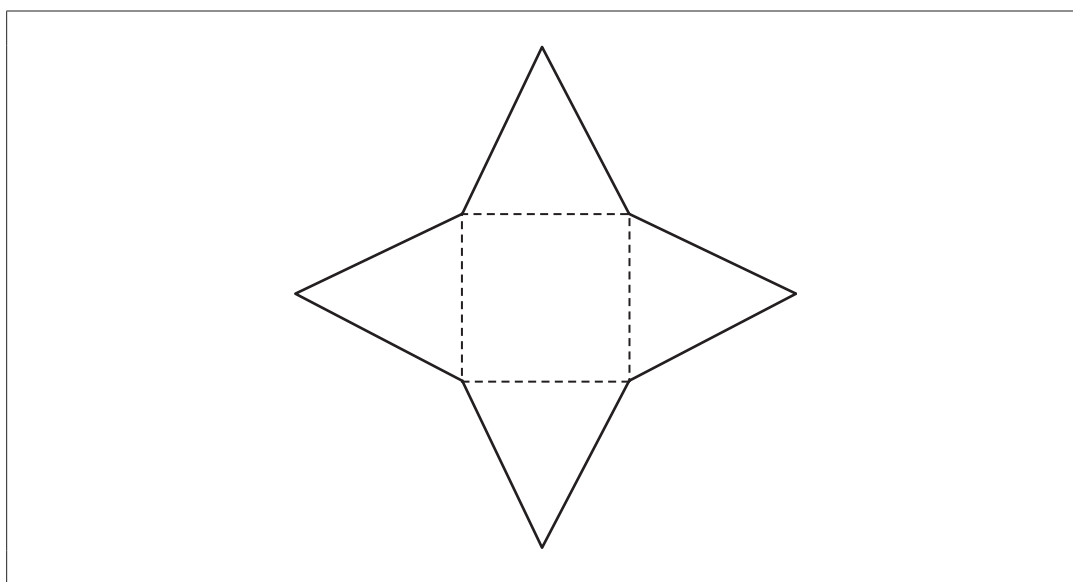
1. Which 3-dimensional object can be formed using the figure shown above?
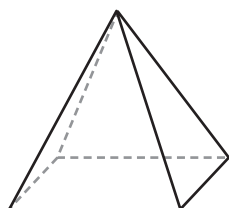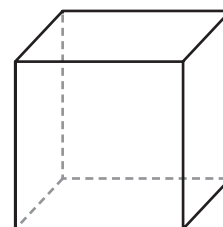
A.

B.

C.

D.

2. In which of the following diagrams can one of the two shapes be rotated to completely cover the other shape?
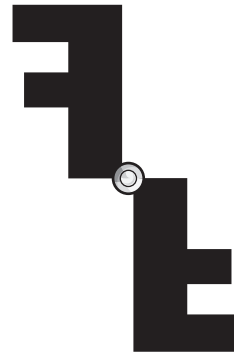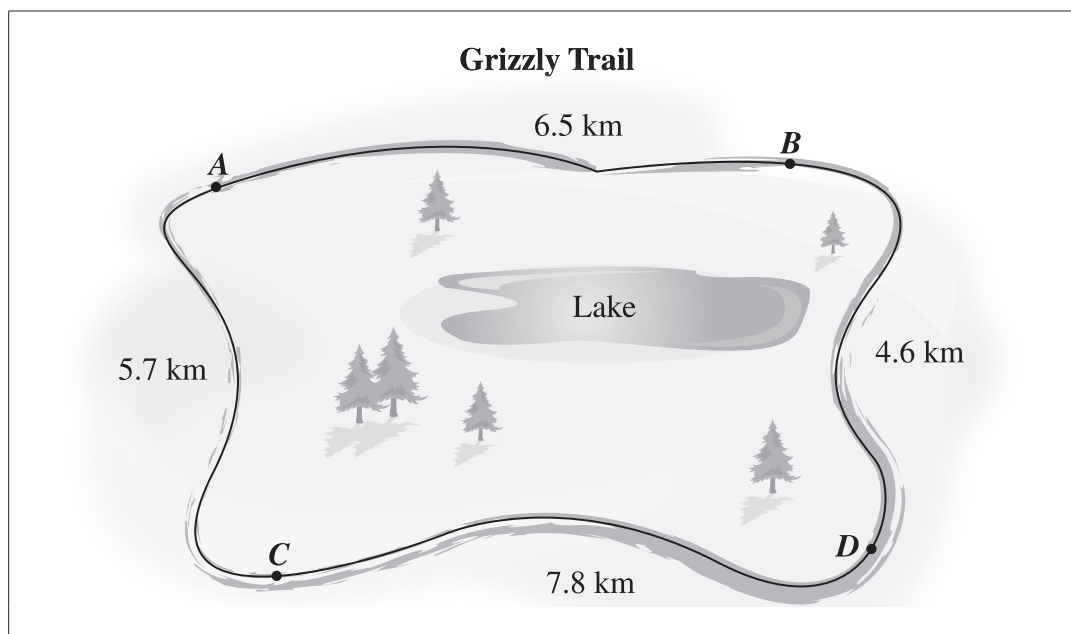
A.

B.

C.

D.

Use the following information to answer question 3.

> Rafe wants to paint his house. Paint is advertised at $9.90 per can, **not** including tax.

3. How much will it cost to buy 4 cans of paint, including 6% tax?

    A. $10.50

    B. $39.60

    C. $41.98

    D. $42.37

Grizzly Trail

6.5 km

A

B

Lake

4.6 km

5.7 km

C

D

7.8 km

4. If Lynn hikes around Grizzly Trail **2 times**, then what is the approximate distance she hikes?

   A. 25 km
   B. 26 km
   C. 44 km
   D. 50 km

T *U* *V* *W*

−6 0 6
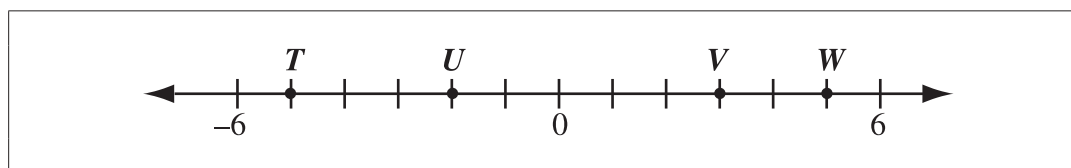
5. Which labelled point on the number line is greater than −3 but less than 0?

   A. T
   B. U
   C. V
   D. W

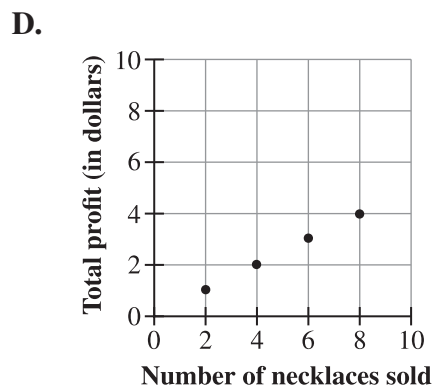Leanne makes seashell necklaces. She earns a $2.00 profit on every necklace that she sells.

6. Which of the following graphs shows the relationship between the **total** profit made and the number of seashell necklaces sold?

A.

B.

C.

D.
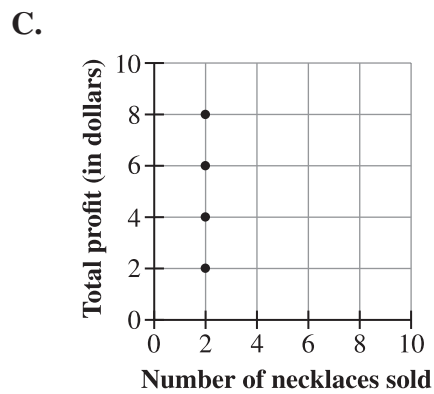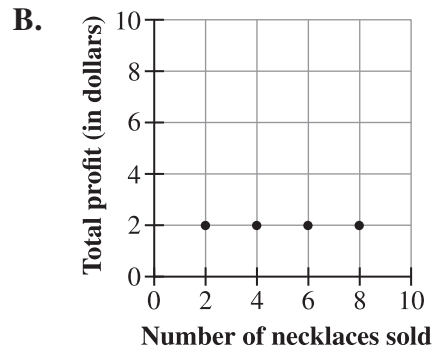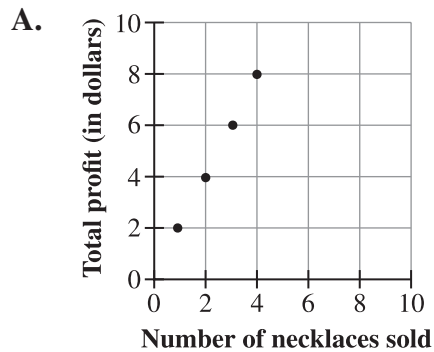
A bottle depot pays $0.05 for each empty pop can collected.

Numerical Response
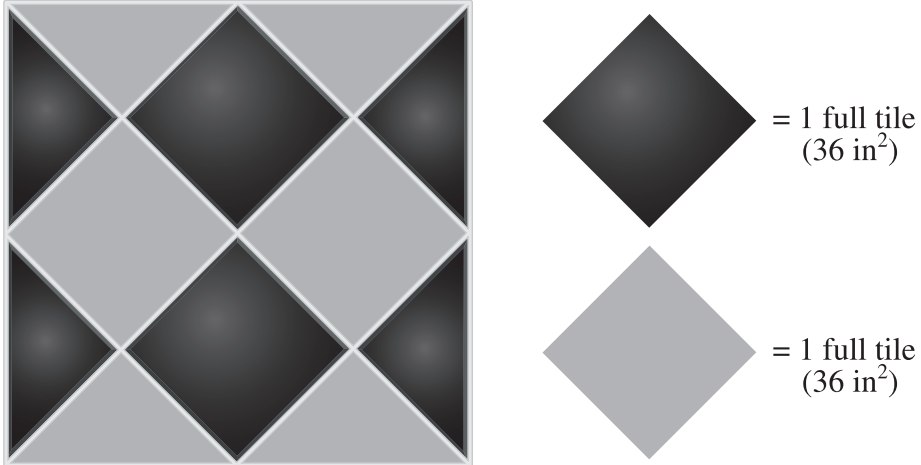
1. How many empty pop cans were collected if $4.10 was paid?

Answer: _____

(Record your answer in the numerical-response section on the answer sheet.)

5

A homeowner places the tile design shown below in the centre of a tile floor.

= 1 full tile
(36 in^2)

= 1 full tile
(36 in^2)

7. What is the area of the tile design?

- **A.** 432 in^2
- **B.** 288 in^2
- **C.** 216 in^2
- **D.** 144 in^2

8. What is the area of a quadrilateral that is formed from two triangles with bases of 12 cm and heights of 6 cm?

- **A.** 18 cm^2
- **B.** 36 cm^2
- **C.** 72 cm^2
- **D.** 144 cm^2

9. Which of the following pairs of 2-D shapes represents a reflection?
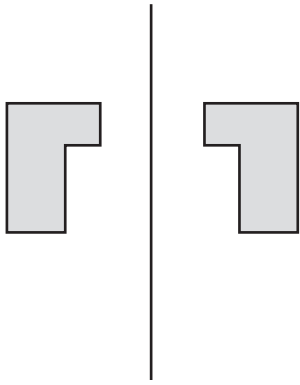
A.
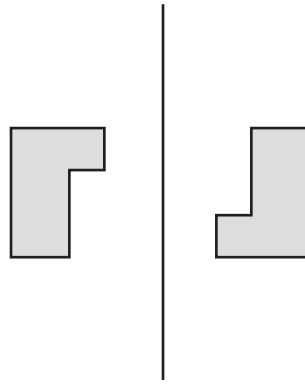
B.
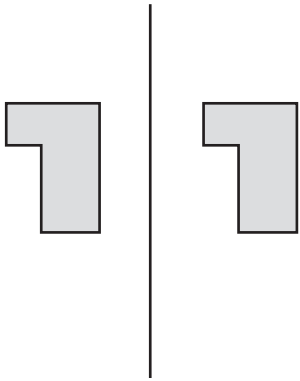
C.
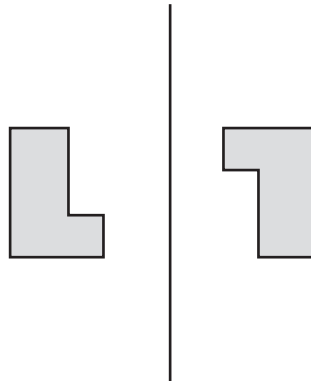
D.

10. What is 3 775 written in expanded form?

    A. $(37 \times 1\ 000) + (7 \times 10) + (5 \times 1)$

    B. $(3 \times 1\ 000) + (7 \times 100) + (75 \times 10)$

    C. $(3 \times 1\ 000) + (7 \times 100) + (7 \times 10) + (5 \times 1)$

    D. $(3 \times 10\ 000) + (7 \times 100) + (7 \times 10) + (5 \times 1)$

Use the following information to answer question 11.

Seven students at Kennedy High School participate in at least one sport, as shown below.

- Mary and Len play basketball only.
- Anne and Susan play volleyball only.
- Tom, Lisa, and Kim play both basketball and volleyball.

11. Which of the following Venn diagrams represents the data shown above?

A.

Basketball   Volleyball

Mary Len | Tom Lisa Kim | Anne Susan

B.

Basketball   Volleyball

Mary Len | Anne Susan | Tom Lisa Kim

C.

Basketball   Volleyball

Anne Susan | Tom Lisa Kim | Mary Len

D.

Basketball   Volleyball

Tom Lisa Kim | Mary Len | Anne Susan
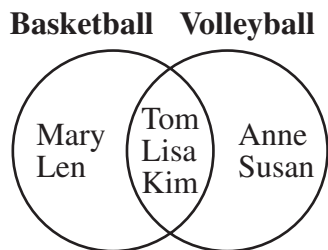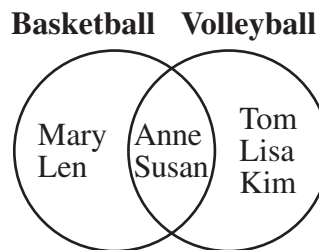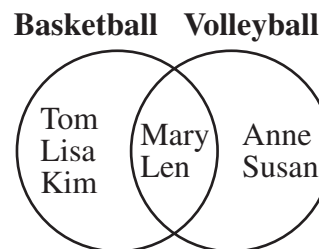
Numerical Response

2. What is the area of a rectangle with a length of 12 ft and a width of 5 ft?

Answer: _____ ft^2

(Record your answer in the numerical-response section on the answer sheet.)

8

Hair Salon

Men's cuts	$15.00
Women's cuts	$42.00
Children's cuts (12 and under)	$10.00
Perms	$90.00

Jenny earns 50% of the money paid to the owner of the Hair Salon for haircuts and perms she completes. Jenny completed 1 women's cut, 1 men's cut, and 1 perm.

12. Which of the following expressions could Jenny use as the **first** step in determining how much money she earned?

A. 15.00 + 42.00 + 90.00

B. 15.00 × 42.00 × 90.00

C. 147.00 × 5.0

D. 147.00 × 0.5

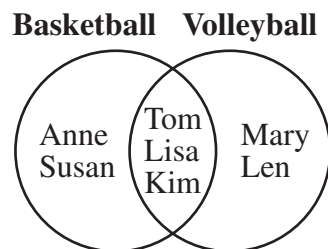The frequency table below shows how many points were scored by players on a basketball team in a tournament.

Points scored	26	24	18	15	13	8
Number of players	1	3	1	5	2	2

13. How many players scored 15 or more points?

A. 5

B. 9

C. 10

D. 14

9

Knowledge and Employability Mathematics –
2010 Test Blueprint and Item Descriptions

The following table provides information on 15* of the test items that appeared on the 2010 Grade 9 Knowledge and Employability Mathematics Achievement Test.

General Outcomes	Reporting Category		Number and Proportion of Questions (on 2010 PAT)
	Knowledge	**Skills**	
Number • Number Concepts • Number Operations	5 10	3 4 NR1	**18 (36%)**
Patterns and Relations • Patterns and Relationships • Variables and Equations		6 12	**6 (12%)**
Shape and Space • Measurement • 3-D Objects and 2-D Shapes • Transformations	9 NR2	1 2 7 8	**17 (34%)**
Statistics and Probability • Collecting and Analyzing Information	13	11	**9 (18%)**
Number and Proportion of Questions (on 2010 PAT)	**17 (34%)**	**33 (66%)**	**50 (100%)**

* Please note: 35 items have **not** been released from the 2010 Grade 9 Knowledge and Employability Mathematics Achievement Test.

The table below provides information about each question: the keyed response, the difficulty of the item (the percentage of students who answered the question correctly), the reporting category, the strand, and the item description.

Question	Key	Difficulty (%)	Reporting Category	Strand	Item Description
1	C	90.9	S	S&S	Identify a three-dimensional figure based on a representation of a net.
2	D	55.3	S	S&S	Identify a diagram that represents a rotation.
3	C	42.3	S	N	Apply arithmetic operations to whole numbers in an everyday context.
4	D	53.6	S	N	Round numbers to calculate the approximate distance based on data in a diagram.
5	B	63.2	K	N	Identify the position of an integer on a given number line.
6	A	49.0	S	P&R	Identify the graph that represents the relationship in the given information.
NR1	82	55.9	S	N	Solve a problem involving the division of decimal numbers.
7	B	60.1	S	S&S	Calculate the area of a large rectangle using smaller rectangles which have a given area.
8	C	40.4	S	S&S	Calculate the area of a quadrilateral given the base and height.
9	A	79.7	K	S&S	Identify the shapes which represent a reflection.
10	C	63.5	K	N	Identify the representation of a given number in expanded form.
11	A	82.9	S	S&P	Interpret information to identify the Venn diagram that represents a set of data.
NR2	60	47.5	K	S&S	Determine the area of a rectangle given the length and width.
12	A	59.4	S	P&R	Determine the expression that represents the first step needed to complete a calculation.
13	C	56.9	K	S&P	Interpret information from a frequency table and complete a calculation.