

# Mental Math

## Grade 9 Mathematics (10F)

F-1

Substrand: Transformations

Specific Learning Outcome: 9.SS.4

General Questions	Answers
1. Add: $-12.4 + 3.1$	-9.3
2. If 19 out of 20 students obtained at least $\frac{15}{30}$ on the last mathematics test, what percentage of students obtained at least 50% on the test?	95%
3. What is the price of a \$50 soccer ball after a 20% discount?	\$40
4. Sonia works in a restaurant and prepares an average of 15 steaks per hour. How many steaks will she prepare in 6 hours?	90 steaks
5. Kamal paid \$63 for a pair of jeans. Arielle bought the same pair for \$25 less. How much did Arielle pay?	\$38
6. What is 5% of \$780?	\$39
Unit Questions	
7. A square garden with a perimeter of 24 m is drawn on a scale of 1:300. What is the perimeter of the drawing of the garden?	8 cm
8. On a coordinate plane, the vertex of a polygon is drawn at $(-2, 6)$ . What are the coordinates of the vertex if the drawing is enlarged by a factor of 2?	$(-4, 12)$
9. A pentagon is reproduced with a scale of 3:2. If one side of the pentagon is 6 cm, what is the measure of the corresponding side of the reproduced pentagon?	9 cm
10. An equilateral triangle with sides equal to 22 cm is drawn so that its sides measure 11 cm. What scale factor was used?	1:2
Other Questions	
11.	
12.	

# Mental Math

## Grade 9 Mathematics (10F)

F-2

Substrand: Transformations

Specific Learning Outcome: 9.SS.4

### General Questions

1. What is the total cost of 5 towels at \$4.40 each?
2. What is the area of a rectangular patio measuring 7 m by 5 m?
3. What is the price of one hamburger if 8 cost \$40?
4. Simplify:  $5m(3 + m)$
5. A factory, open 7 days per week, manufactures 10 boats per day. How many boats can it make in 12 weeks?
6. Nine out of 30 students are enrolled in a volunteer program overseas. What percentage of students is this?

### Answers

\$22

$35 \text{ m}^2$

\$5

$15m + 5m^2$

840 boats

30%

### Unit Questions

The vertices of a geometric figure are D(0, 0), E(-2, 4), F(-2, -2), and G(6, 2). Use these coordinates to answer questions 7 to 10.

7. What are the coordinates for vertices D and E if the figure is reproduced on a scale of 1:2?
8. What are the coordinates for F and G if the figure is expanded by a factor of 3?
9. What scale is used if point E is reproduced with coordinates (-8, 16)?
10. Describe the relationship between the size of the original and the new figure described in question 9.

D(0, 0)  
E(-1, 2)

F(-6, -6)  
G(18, 6)

4:1

enlarged 4  
times

### Other Questions

11.

12.

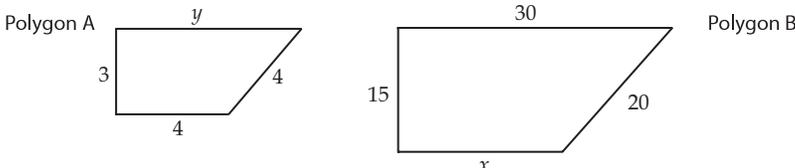
# Mental Math

## Grade 9 Mathematics (10F)

F-3

Substrand: Transformations

Specific Learning Outcome: 9.SS.4

General Questions	Answers
1. Evaluate: $50^2$	2500
2. Express $2\frac{3}{4}$ as a decimal number.	2.75
3. How much will each person receive if \$39 is divided equally among three people?	\$13
4. Two out of 30 students in your class have an after-school job. What fraction of students does that represent?	$\frac{1}{15}$
5. Calculate the GST (5%) on a \$62 bill.	\$3.10
6. If the balance of your savings account is \$46 and you deposit a cheque for \$235, what is the new balance?	\$281
Unit Questions	
To answer questions 7 to 10, use the diagrams of the similar polygons shown below.	
	
7. What scale is used if Polygon B is transformed to become Polygon A?	1:5
8. What scale is used if Polygon A is transformed to become Polygon B?	5:1
9. Find the value of $x$ .	20
10. Find the value of $y$ .	6
Other Questions	
11.	
12.	

# Mental Math

## Grade 9 Mathematics (10F)

F-4

Substrand: Transformations

Specific Learning Outcome: 9.SS.5

### General Questions

1. How long is a film in hours if it lasts 105 minutes?
2. If a piece of candy costs 25¢, how many pieces can you buy with \$7?
3. Ralph was born in November 1929. How old was he when he became a grandfather in 1985?
4. If you make a purchase for \$5.82 and pay with a \$20 bill, how much change will you receive?
5. Reduce the fraction  $\frac{8}{10}$ .
6. Find the perimeter of a rectangle with a length of 16 m and a width of 12 m.

### Answers

$1\frac{3}{4}$  or  
1.75 hours

28 pieces

56 years old

\$14.18

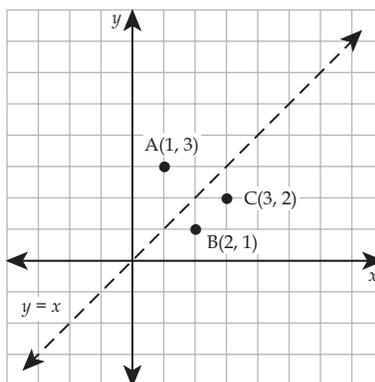
$\frac{4}{5}$

56 m

### Unit Questions

For questions 7 to 10, determine the coordinates for the requested point after the given transformation. Use the diagram shown below.

7. Point A: Reflection over the  $x$ -axis.
8. Point A: Reflection over the  $y$ -axis.
9. Point B: Reflection over the  $y$ -axis.
10. Point C: Reflection over the line  $y = x$ .



(1, -3)

(-1, 3)

(-2, 1)

(2, 3)

### Other Questions

11.

12.

# Mental Math

## Grade 9 Mathematics (10F)

F-5

Substrand: Transformations

Specific Learning Outcome: 9.SS.5

### General Questions

1. What is the cost of 5 milkshakes at \$1.99 each?
2. A playlist contains 12 songs for a total length of 59 minutes. Estimate the average length of each song.
3. What is smaller: \$100 or 20% of \$400?
4. What is the surface area of a cube with a 2 cm edge?
5. What is the value of  $d$  in  $20 = 4d + 8$ ?
6. You started with \$43, and spent \$19 on dinner. How much money do you have left?

### Answers

\$9.95

$\approx 5$  minutes

20% of 400

$24 \text{ cm}^2$

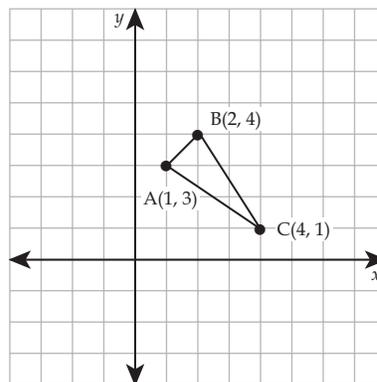
3

\$24

### Unit Questions

What are the coordinates of the given point after the requested rotation with respect to the origin? Use the diagram below.

7. Point A:  $90^\circ$  clockwise
8. Point B:  $180^\circ$
9. Point C:  $90^\circ$  counter-clockwise
10. Point A:  $360^\circ$



(3, -1)

(-2, -4)

(-1, 4)

(1, 3)

### Other Questions

11.

12.

# Mental Math

## Grade 9 Mathematics (10F)

F-6

Substrand: Transformations

Specific Learning Outcome: 9.SS.5

### General Questions

1. What number is 5 times larger than 52?
2. How many servings of 250 g can you make out of 6.25 kg of tomato soup?
3. If Ashley works 50 hours at an hourly rate of \$9, what is her gross income?
4. Your cellphone plan includes 720 minutes of talk time per month. If you use an average of 30 minutes per day in the month of June, on how many minutes will you have to pay additional fees?
5. Write an expression that represents the sum of 8 and twice  $m$ .
6. Find the perimeter of an equilateral triangle if each side measures 12 mm.

### Answers

260

25 servings

\$450

180 minutes

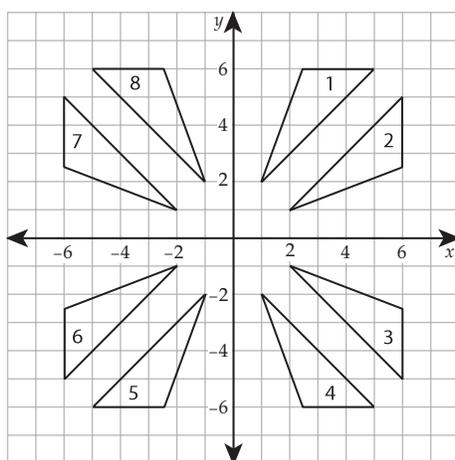
$8 + 2m$

36 mm

### Unit Questions

Using the diagram below, describe the transformations that allow Triangle 1 to be moved to the position of:

7. Triangle 3
8. Triangle 4
9. Triangle 5
10. Triangle 8



rotate clockwise  $90^\circ$  about the origin

reflect over the  $x$ -axis

rotate  $180^\circ$  about the origin or reflect over the  $x$ -axis and the  $y$ -axis

reflect over the  $y$ -axis

### Other Questions

11.

12.

# Mental Math

## Grade 9 Mathematics (10F)

F-7

Substrand: Transformations

Specific Learning Outcome: 9.SS.5

### General Questions

1. You buy a bottle of vitamins for \$7.28 and oranges for \$4.30 to fight the flu. How much were your purchases?
2. How many rows of 20 are there in a room with 1000 seats?
3. What is the probability that you will flip a quarter that lands on tails?
4. What two integers have a sum of  $-8$  and a product of 15?
5. What is the cost of a 17-minute telephone call if a minute costs 5¢?
6. How many kilograms are equivalent to 54 500 grams?

### Answers

\$11.58

50 rows

$\frac{1}{2}$

$-3$  and  $-5$

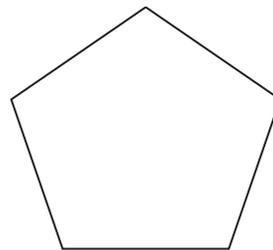
85¢

54.5 kg

### Unit Questions

Use the regular pentagon shown below for questions 7 to 9. Determine

7. the number of lines of symmetry.
8. the order of rotation.
9. the angle of rotation.
10. Among the following letters of the alphabet, F, A, T, and X, which have no lines of symmetry?



5

5

$72^\circ$  or  $\frac{1}{5}$  turn

F

### Other Questions

11.

12.