Mental Math

Grade 10 Essential Mathematics (20S)

H–1

Unit H: Transformations

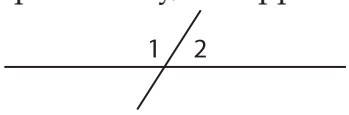
General Questions	Answers
1. What is the formula for tangent?	$\tan\theta = \frac{\text{opposite}}{\text{adjacent}}$
2. The sides of a right triangle are 85, 36, 77. What are the two possible tangent ratios of this triangle?	$\frac{36}{77}$ or $\frac{77}{36}$
3. A circle is divided into 360°. How many degrees are in a semicircle (half-circle)?	180°
4. You are paid $15 per hour. If you work 20 hours per week, how much money will you earn in a week?	$300
5. You would like to get your poster framed. The area of the poster is 4500 cm^2. If the height of the poster is 0.3 m, what is the length in centimetres?	150 cm
Unit Questions	
6. According to the "rule method," how do you write a shift of 3 units down and 2 units to the left?	[D3, L2]
7. A figure has been translated according to the rule [D3, R1]. How many units is the figure moved horizontally (and in what direction)?	1 unit right
8. A rectangle is translated 2 units up and 3 units right, and then 4 units down and another 3 units to the right. Write the total translation of the rectangle using the notation of the rule method.	[D2, R6]
Other Questions	
9.	
10.	

Mental Math

Grade 10 Essential Mathematics (20S)

H–2

Unit H: Transformations

General Questions	Answers
1. You are buying a t-shirt for $14.83. If you pay with a $20 bill, how much change will you receive?	$5.17
2. A right triangle has the sides 8, 15, 17. What are the two possible sine ratios?	$\frac{8}{17}$ and $\frac{15}{17}$
3. Evaluate: 90×3	270
4. Your paycheque was $500. Estimate your CPP (4.95%).	$\approx$ $25
5. Are consecutive angles (beside each other) of a transversal equal, complementary, or supplementary? 	supplementary
Unit Questions	
6. You go down 6 steps that are 1 unit high and 1 unit wide. Write your translation using the rule method notation.	[D6, R6] or [R6, D6]
7. A figure has been moved four times in succession, each with a move of 2 units upward. How many units has the figure moved in total?	8 units
8. Three (3) iterations of the translation [U4, R1] were performed on a figure. Write a single translation representing these three iterations using the rule method notation.	[U12, R3]
Other Questions	
9.	
10.	

Mental Math

Grade 10 Essential Mathematics (20S)

H–3

Unit H: Transformations

General Questions	Answers
1. You want to go to bed at 10:15 p.m. You also want to watch a movie that lasts 2 hours and 30 minutes. What time, at the latest, should you start watching the movie?	7:45 p.m.
2. There are 20 players on your rugby team. Seven of them are missing the game for a school concert. What percent of your team is at the game?	65%
3. Is the answer to -11×-13 positive or negative?	positive
4. If you translate a point 4 units to the left and then 3 to the right, how far is the new point from the original point and in what direction?	1 unit left
5. Your hourly wage is $8.00. You are paid time-and-a-half for overtime. If you work 4 hours of overtime, how much will you be paid for it?	$48
Unit Questions	
6. You are making a U-turn on the street. What angle of rotation did you make?	180°
7. You are rotating a triangle clockwise 35°. How many degrees does this correspond to if rotating the triangle counter-clockwise instead?	325°
8. How many times do you need to perform a 45° rotation on an object before the figure returns to its original position?	8
Other Questions	
9.	
10.	

Mental Math

Grade 10 Essential Mathematics (20S)

H–4

Unit H: Transformations

General Questions	Answers
1. A right triangle has sides 0.21, 0.20, 0.29. Write two possible ratios for cosine of this triangle.	$\frac{21}{29}$ and $\frac{20}{29}$
2. Evaluate if $w = 5$: $2w - 7$	3
3. What are the factors of 28?	1, 2, 4, 7, 14, 28
4. Dylan is 6′ 2″ tall. How tall is he in inches?	74
5. Determine the number of hours per day, on average, that you watch TV each week if you usually watch 1 h on Monday, 2 h on Tuesday, 2 h on Thursday, 2 h on Saturday, and 3.5 h on Sunday.	1.5 h/day
Unit Questions	
6. On a Cartesian plane, the point A(3,2) is reflected over the y-axis to give the point A′. What are the coordinates of the point A′?	(−3, 2)
7. On a Cartesian plane, the point B′(−4, −5) is the reflection of the point B over the x-axis. What are the coordinates of point B?	(−4, 5)
8. The point P, located in Quadrant III, undergoes two (2) consecutive reflections, first over the x-axis and then over the y-axis. In which quadrant is the reflection of the point P?	Quadrant I
Other Questions	
9.	
10.	

Mental Math

Grade 10 Essential Mathematics (20S)

H–5

Unit H: Transformations

General Questions	Answers
1. Audrey reads 2 pages per minute. The latest book she is reading is 720 pages long. How long will it take her to read it?	6 hours
2. What is the complementary angle to 41°?	49°
3. You work 6.5 hours per day, 6 days per week. How many hours per week do you work?	39
4. Your younger brother tells you that he is 100 cm tall. Estimate how tall he is in inches (1 inch = 2.54 cm).	≈ 40
5. You are given $3.32 change for buying breakfast at Moonbucks. If you gave the cashier a $10 bill and your total was $6.78, did you get the correct change?	No, you received too much.
Unit Questions	
6. Given a rectangle ABCD, how many rotations of 30° around point A can be made before it returns to its original position?	12
7. How many axes of symmetry are there in an equilateral triangle?	3
8. How many axes of symmetry are there in a square?	4
Other Questions	
9.	
10.	

Mental Math

Grade 10 Essential Mathematics (20S)

H–6

Unit H: Transformations

General Questions	Answers
1. There is a big sale at your favourite store. Everything is 30% off. Your bill before the discount is $200. How much will you pay after the discount?	$140
2. Solve for b: $\frac{b}{8} = \frac{6}{20}$	$\frac{12}{5}$ or 2.4
3. There are 3 teams in a tournament. Team A wins against Team B. Team B loses to team C. Team C loses to Team A. Does any team win both their games?	Team A
4. The map of your mom's office has a scale of 1 cm: 3 m. On the map, your mom's office is 1 cm by 1 cm. What is the actual area of your mom's office?	9 m^2
5. Rotation 90° clockwise is the same as rotating counter-clockwise ___°?	270°
Unit Questions	
6. Rectangle ABCD, with dimensions 12 cm by 8 cm, undergoes a dilation transformation with a scale factor of $\frac{1}{2}$. What are the dimensions of the new rectangle?	6 cm by 4 cm
7. A square underwent a dilation transformation. Its sides of 12 cm now measure 36 cm. What is the scale factor of the dilation?	$\frac{36}{12}$ or $\frac{3}{1}$
8. A circle with a radius of 20 cm is a dilation of a circle with a radius of 1 m. What is the scale factor of the dilation?	$\frac{20}{100}$ or $\frac{1}{5}$
Other Questions	
9.	
10.	

Mental Math

Grade 10 Essential Mathematics (20S)

H–7

Unit H: Transformations

General Questions	Answers
1. The dimensions of Edward's yard are 20 m by 60 m. How much fence will Edward need if he is building a fence around his yard?	160 m
2. A test consists of 7 questions worth 3 marks, 12 questions worth 5 marks, and 4 questions worth 4 marks. What is the total mark value of the test?	97
3. You are filling up your scooter with gas that costs $1.00 per litre. If your scooter's gas tank holds 8 L and you've still got 1.5 L in the tank, how much will it cost you to fill up?	$6.50
4. In order for a rotation to appear exactly the same as the original, how much must you rotate the original object (in degrees)?	360°
5. Evaluate: $\frac{4}{7} \times \frac{8}{3}$	$\frac{32}{21}$
Unit Questions	
6. Among the letters A, H, I, M, O, T, V, and Z, which letter(s) has neither a horizontal nor a vertical line of symmetry?	Z
7. Using transformations, which of the following geometric figures are not suitable to be used as paving stones: square, circle, oval, rectangle, or triangle?	circle, oval
8. Among the letters A, H, I, M, O, T, V and Z, which have at least two axes of symmetry?	H, I, and O
Other Questions	
9.	
10.	

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