Year 9 Worksheet 1:
Computation and Financial mathematics

Question 1: Answer the following.

(1) 7.06836 written to three significant figures is:

A. 7.06   B. 7.07   C. 7.068   D. 7.069   E. 7.68

(2) 3.75 written as a fraction in simplest form is:

A. $2\frac{1}{2}$ B. $\frac{37}{5}$ C. $\frac{15}{4}$ D. $3\frac{7}{5}$ E. $\frac{375}{100}$

(3) Simplifying the ratio 12 m : 30 cm gives:

A. 40 : 1   B. 2 : 5   C. 12 : 30   D. 2 : 3   E. 5 : 2

(4) 25% of $2500 is equal to:

A. 50   B. 875   C. $875   D. $250   E. 250

(5) $1\frac{2}{3} - \frac{5}{9}$ is equal to:

A. $\frac{10}{3}$ B. $\frac{3}{9}$ C. $\frac{7}{3}$ D. $\frac{7}{9}$ E. $\frac{10}{9}$

(6) $\frac{2}{3} \times \frac{9}{7}$ is equal to:

A. $\frac{7}{6}$ 　　　　 B. $\frac{2}{7}$ 　　　　 C. $\frac{6}{7}$ 　　　　 D. $\frac{6}{21}$ 　　　　 E. $\frac{11}{3}$

(7) $\frac{5}{6} \div \frac{3}{5}$ is equal to:

A. $\frac{25}{18}$ 　　　　 B. $\frac{1}{2}$ 　　　　 C. $\frac{15}{30}$ 　　　　 D. $\frac{6}{10}$ 　　　　 E. 1

(8) Sarah receives a wage of $19.50 per hour. Over a week, she works 15 hours at this regular rate and then puts in 5 hours on a special holiday when she earns time and a half. What is her total weekly earnings?

A. $213.75 　　 B. $292.50 　　 C. $390.00 　　 D. $438.75 　　 E. $1950.00

(9) Laura receives a weekly base salary of $420 and earns a 15% commission on all the sales she generates. If she generates $3,600 in sales during a specific week, what will her total earnings for that week be?

A. $910 　　 B. $520 　　 C. $960 　　 D. $540 　　 E. $980

(10) An initial investment of $1,500 grows by 21% annually through compound interest for two years. What is the total balance at the end of the two-year period to the nearest dollar?

A. $1,983 　　 B. $2,196 　　 C. $1,725 　　 D. $2,650 　　 E. $1,635

Question 2: Answer the following.

1	Evaluate the following and express the answer in mixed number form.
	a. $1\frac{2}{5} + 2\frac{1}{2}$
	b. $4\frac{4}{5} - 3\frac{3}{4}$
	c. $1\frac{1}{10} \times 2\frac{3}{5}$
	d. $\frac{5}{7} \div 1\frac{12}{25}$

2 | Sarah and Michael are planning a pizza party. They want to split the pizzas in a ratio of 3:4. They discover two pizzerias with different prices and sizes.

a. Determine which Pizzeria offers the better deal:

Pizzeria A: 5 large pizzas for $38.50
Pizzeria B: 3 large pizzas for $22.99

b. Calculate the cost of ordering 20 large pizzas and find how much they could save from the better deal.

c. Determine the contribution of Sarah and Michael if they choose Pizzeria B.

3	Out of a school team's cross-country runners, 20% fall within the weight range of 60 to 70 kg. If the cross-country team consists of 4% of the school's 1,125 students, how many students within the team weigh between 60 and 70 kg?
4	a. A laptop's price rises from $450 to $500. Determine the percentage increase.
	b. The attendance at a concert decreases from 720 to 640. Calculate the percentage decrease, rounding to one decimal place.
	c. Following a downpour, the volume of water in a reservoir increases by 15% to 1,725 liters. How much water was in the reservoir before the rain? Round the answer to the nearest liter.

5	a. A clothing store increases the prices of all its dresses by 25%. If the cost price of one dress is $200, what will be its selling price?
	b. A furniture store announces a 20% discount on all sofas as a summer promotion. Calculate the discounted price of a sofa that originally costs $1,500.
	c. Tech World reduces the price of a laptop by 10% during a back-to-school sale. If the sale price is $765, what was the laptop's original price?

6	a. Emma has a part-time job where she works 16 hours during the weekdays at the regular hourly rate of $20. She also works an additional 6 hours on the weekends at times and a half. How much does Emma earn in a week?
	b. Olivia's wage per hour is adjusted. In a week, she works 9 hours at the standard rate, 4 hours at time and a half, and 5 hours at double time. If her total weekly earnings are $570, what is her new hourly wage?
	c. Lisa is compensated for assembling furniture. She is paid $20 for each piece she assembles. Last week, she worked 7 hours per day for 5 days and assembled 15 pieces of furniture. Determine her hourly wage.

7	Emily intends to purchase a laptop that is advertised for $1,500, but she currently lacks the full amount. She opts for a "buy now, pay later" agreement where she makes an initial payment of $400 and then pays $80 each month for 3 years.
	a. Calculate the total cost Emily will pay for the laptop.
	b. Why is the total cost of buying the laptop using this method higher than the initially advertised price?
	c. Determine the amount Emily could have saved by paying the full advertised price upfront rather than choosing the "buy now, pay later" option.
	d. Calculate the annual simple interest rate, expressed as a percentage of the original laptop price, in this "buy now, pay later" agreement.

8	a. Determine the final amount of an investment if $9,500 is invested at an annual interest rate of 4% compounded annually for 5 years.
	b. After 8 years, a debt has grown to $75,800. If the interest is compounded annually at a rate of 6.5%, find the original loan amount, rounding to the nearest dollar.
	c. An electronic gadget is valued at $600 and is expected to depreciate by 10% per year. What will be the gadget's worth at the end of the fifth year?

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Answer Key

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A. 7.06   B. 7.07   C. 7.068   D. 7.069   E. 7.68

Answer: B 7.07

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A. $2\frac{1}{2}$ B. $\frac{37}{5}$ C. $\frac{15}{4}$ D. $3\frac{7}{5}$ E. $\frac{375}{100}$

Answer: C. $\frac{15}{4}$

(3) Simplifying the ratio 12 m : 30 cm gives:

A. 40 : 1   B. 2 : 5   C. 12 : 30   D. 2 : 3   E. 5 : 2

Answer: A. 40 : 1

(4) 25% of $2500 is equal to:

A. 50   B. 875   C. $875   D. $250   E. 250

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(5) $1\frac{2}{3}$ $-$ $\frac{5}{9}$ is equal to:

A. $\frac{10}{3}$ B. $\frac{3}{9}$ C. $\frac{7}{3}$ D. $\frac{7}{9}$ E. $\frac{10}{9}$

Answer: E. $\frac{10}{9}$

(6) $\frac{2}{3}$ × $\frac{9}{7}$ is equal to:

A. $\frac{7}{6}$ B. $\frac{2}{7}$ C. $\frac{6}{7}$ D. $\frac{6}{21}$ E. $\frac{11}{3}$

Answer: C. $\frac{6}{7}$

(7) $\frac{5}{6}$ ÷ $\frac{3}{5}$ is equal to:

A. $\frac{25}{18}$ B. $\frac{1}{2}$ C. $\frac{15}{30}$ D. $\frac{6}{10}$ E. 1

Answer: A. $\frac{25}{18}$

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Answer: D. $438.75

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Question 2: Answer the following.

1	Evaluate the following and express the answer in mixed number form. a. $1\frac{2}{5} + 2\frac{1}{2}$ $= 3\frac{9}{10}$ b. $4\frac{4}{5} - 3\frac{3}{4}$ $= 1\frac{1}{20}$ c. $1\frac{1}{10} \times 2\frac{3}{5}$ $= 2\frac{43}{50}$ d. $\frac{5}{7} \div 1\frac{12}{25}$ $= \frac{65}{133}$
2	Answers: a. To find the better value, calculate the price per large pizza for each option: Pizzeria A: \$38.50 / 5 pizzas = \$7.70 per large pizza Pizzeria B: \$22.99 / 3 pizzas ≈ \$7.66 per large pizza Pizzeria B offers the better value. b. For 20 large pizzas: Pizzeria A: 20 pizzas * \$7.70 per pizza = \$154.00 Pizzeria B: 20 pizzas * \$7.66 per pizza ≈ \$153.20 Save: 80c c. If they choose Pizzeria B, Sarah and Michael, they want to split the pizzas in a ratio of 3:4. Sarah: \$65.66 Michael: \$87.54

3	Answer: Calculate the total number of students in the cross-country team: 40% of 1,125 students = (40/100) * 1,125 = 450 students Now, find 20% of these 450 students to determine how many weigh between 60 and 70 kg: 20% of 450 students = (20/100) * 450 = 90 students
4	Answers: a. To find the percentage increase, subtract the initial price from the final price, divide by the initial price, and multiply by 100: Percentage Increase = [(500 - 450) / 450] * 100 = (50 / 450) * 100 ≈ 11.1% b. To calculate the percentage decrease, subtract the final attendance from the initial attendance, divide by the initial attendance, and multiply by 100: Percentage Decrease = [(640 - 720) / 720] * 100 = (-80 / 720) * 100 ≈ -11.1% c. To find the initial volume of water, divide the final volume by 1 plus the percentage increase in decimal form: Initial Volume = Final Volume / (1 + Percentage Increase in Decimal Form) Initial Volume = 1,725 / (1 + 0.15) ≈ 1,500 liters
5	Answers: a. The selling price of the dress can be found by adding the markup percentage to the cost price: Selling Price = Cost Price + Markup Selling Price = $200 + (25% of $200) Selling Price = $200 + ($50)

Selling Price = $250

The selling price of the dress is $250.

b. To calculate the discounted price of the sofa, subtract the discount percentage from 100% to find the percentage paid, and then multiply it by the original price:

Discounted Price = (100% - 20%) of $1,500
Discounted Price = (80% of $1,500)
Discounted Price = 0.8 * $1,500
Discounted Price = $1,200

The discounted price of the sofa is $1,200.

c. To find the original price of the laptop, you can set up the equation:

Original Price - 10% of Original Price = Sale Price
0.9 * Original Price = $765

Now, solve for the original price:

Original Price = $765 / 0.9
Original Price = $850

The original price of the laptop was $850.

6	Answers:
	a. To calculate Emma's earnings, we'll first find the earnings for the regular hours and then add the earnings for the weekend hours.
	Earnings for regular hours = 16 hours * $20/hour = $320
	Earnings for weekend hours = 6 hours * ($20/hour * 1.5) = $180
	Total earnings = $320 + $180 = $500
	Emma earns $500 for the week.

	b. Let x be Olivia's new hourly wage. We can set up an equation based on her weekly earnings: Earnings for regular hours = 9 hours * x Earnings for time and a half = 4 hours * (1.5 * x) Earnings for double time = 5 hours * (2 * x) Total earnings = 9x + 6x + 10x = 25x Given that her total earnings are $570, we can solve for x: 25x = $570 x = $22.80 Olivia's new hourly wage is $22.80. c. To calculate Lisa's hourly wage, divide her total earnings by the total number of hours worked: Total Earnings = $20 per piece * 15 pieces = $300 Total Hours Worked = 7 hours/day * 5 days = 35 hours Hourly Wage = Total Earnings / Total Hours Worked Hourly Wage = $300 / 35 hours ≈ $8.57 per hour Lisa's hourly wage is approximately $8.57.
7	Answers: a. To calculate the total cost, add the initial payment to the total monthly payments: Total Cost = Initial Payment + (Monthly Payment * Number of Months) Total Cost = $400 + ($80 * 36) Total Cost = $400 + $2,880 Total Cost = $3,280 Emily will pay a total of $3,280 for the laptop.

	b. The total cost is higher because the "buy now, pay later" agreement includes interest or fees for the convenience of spreading out the payments over time. c. To find the savings, subtract the total cost from the advertised price: Savings = Advertised Price - Total Cost Savings = $1,500 - $3,280 Savings = -$1,780 Emily could have saved $1,780 by paying the advertised price upfront. d. To calculate the annual interest rate, you can use the formula: Annual Interest Rate = [(Total Cost - Advertised Price) / Advertised Price] / Number of Years Annual Interest Rate = [($3,280 - $1,500) / ($1,500)] / 3 * 100% Annual Interest Rate = ($1,780 / $4,500) * 100% Annual Interest Rate ≈ 39.56%
8	Answers: a. To find the final amount of the investment, use the compound interest formula: Final Amount = Principal * (1 + Interest Rate)^Number of Years Final Amount = $9,500 * $(1 + 0.04)^5$ Final Amount ≈ $11,558.63 The total value of the investment after 5 years will be approximately $11,558.63. b. To determine the initial loan amount, you can use the reverse of the compound interest formula:

Initial Loan Amount = Final Amount / (1 + Interest Rate)^Number of Years

Initial Loan Amount = $75,800 / (1 + 0.065)^8 = $45,800

c. To find the gadget's value at the end of the seventh year with a 10% annual depreciation rate, you can use the following formula:

Final Value = Initial Value * (1 - Depreciation Rate)^Number of Years

Final Value = $600 * (1 - 0.10)^7

Final Value = $600 * (0.9)^7 = 286.98