Part 1

Name: _____

1. Insert $<$, $>$ or $=$ to make each of the following statements true.

   a. $\frac{3}{8}$ ☐ 0.5

   b. $4\frac{5}{7}$ ☐ 4.8

   c. 0.0909 ☐ 0.9009

   d. $12 \times {}^-3 + 9$ ☐ 36

2. Complete, using index notation:

   a. $9 \times 9 \times 9 = 9^{\square}$

   b. $3^8 \div 3^5 = 3^{\square}$

   c. $2^2 \times 2^6 = 2^{\square}$

   d. $5 \times 5 \times 4 \times 5 \times 5 = 4^{\bigcirc} \times 5^{\triangle}$

   e. $(3^2)^5 = 3^{\square}$

3. Simplify, leaving your answers in index form:

   a. $8^7 \times 8^3 =$ _____

   b. $2 \times 2^3 \times 2^2 =$ _____

   c. $\dfrac{10 \times 10 \times 10 \times 10}{10^5} =$ _____

   d. $(5^2)^4 =$ _____

   e. $\dfrac{6^{x}}{6^4} =$ _____

4. Evaluate:

   a. $16 \div \frac{2}{3} =$ _____

   b. $2\frac{1}{4} \times 4\frac{3}{4} =$ _____

   c. $9 \times (12 - 3^3) =$ _____

   d. $3^4 =$ _____

   e. $\sqrt[3]{-64} =$ _____

5. Evaluate, correct to 2 decimal places:

   a. $2.8^4 - (12 \times 3.4 \div (5.4 + 3.2 \times 0.234^2)) =$

   _____

   b. $\dfrac{15^2}{24 - 17} =$

c. $\dfrac{5 \cdot 6^3}{\sqrt{7 \cdot 08 + 34 \cdot 7 \times 2 \cdot 01}} =$ _____

6. Convert 357 minutes into hours and minutes.

   _____

7. Write 12·6708 hours correct to the nearest:

   a. second _____

   b. minute _____

8. Find 8 h 2 min 45 s – 3 h 57 min 54 s.

9. A phone operator answers 231 calls on Monday, 56 calls on Tuesday, 149 calls on Wednesday and a total of 987 for the week.

   a. How many calls were made on Thursday and Friday? _____

   b. If each phone call lasted 156 seconds, how long did the operator spend on the phone on Thursday and Friday?

   _____

10. A frog named Bertha jumps 4 metres on her first jump, 2 m on her second, 1 metre on her third jump, and continues to jump $\frac{1}{2}$ the distance of the previous jump each time. Use your calculator to find the distance that Bertha is trying to cover.

    _____

11. A company decides to share its $8·04 million dollar profit equally between its 1567 employees. How much does each employee receive, correct to the nearest dollar? _____

12. The square root of a whole number lies between 8·6 and 8·7. What could the number be? _____

13. Give 3 decimals that, when rounded to 3 decimal places, become 0·982.

PART 1

14. Bryce had a bag of 135 marbles. He gave $\frac{2}{5}$ of the to his brother and divided the rest between himself and two friends. How many of the marbles did Bryce retain?

_____

15. Find two numbers that have a product of 32·64 and a sum of 18·32.

_____

WORKING SPACE.

Topic Test: Numbers and Percentages

PART 2

Name: _____

1. Express as a percentage:
   a. 0·6 _____
   b. $\frac{1}{2}$ _____
   c. $\frac{3}{4}$ _____
   d. $\frac{1}{3}$ _____
   e. 0·125 _____

2. Answer each of the following as either true (T) or false (F).
   a. $70\% > \frac{3}{4}$ _____
   b. $\frac{3}{200} = 1\cdot5\%$ _____
   c. $0\cdot05 = \frac{1}{20}$ _____
   d. $\frac{2}{5} < 40\%$ _____
   e. $x\%$ of $y = y\%$ of x _____

3. Write the following in ascending order:
   $\frac{1}{4}$, 40%, 1·4, $12\frac{1}{2}\%$, $\frac{3}{10}$

4. Give a percentage that lies between $\frac{1}{4}$ and $\frac{1}{5}$.
   _____

5. Find:
   a. 12% of 4000 m = _____
   b. 3% of $560 = _____
   c. $6\frac{1}{4}\%$ of 8·9 kg = _____
   d. 101% of 5 mL = _____
   e. $7\frac{1}{2}\%$ of $9.46 = _____

6. a. Increase $25 by 10% = _____
   b. Decrease $48 by 5% = _____
   c. Increase $107 by $12\frac{1}{2}\%$ = _____
   d. Increase $3 by 250% = _____

7. Decrease $40 by 6% and then increase the result by 6%.
   _____

8. A fruitshop owner buys a box of 24 mangoes for $9. At what price should he sell each mango if he wishes to make a 30% profit?
   _____

9. A shop offers a discount of 20% off the cost of a pair of shoes worth $89.95. Find the sale price of the shoes.
   _____

10. In May, a pie cost $1.80 at the school canteen. On 1 June, the price of a pie went up to $2.40. Calculate the percentage increase in the price of a pie.
    _____

11. a. Carly earns 3% commission on the value of all sales. Find her commission for a week in which her sales total $54 680.
    _____
    b. What would her sales need to be in order for her commission to be over $750 for any given week?
    _____

12. Michael earns $500 per week plus $1\frac{1}{2}\%$ commission on the value of sales over $100 000. How much does Michael earn in a week in which his sales total $150 000?
    _____

13. Calculate the simple interest earned on $7000 invested at $6\frac{1}{4}\%$ p.a. for:
    a. 4 years _____
    b. 30 months _____

14. What is the flat interest rate needed for $5000 to double in 10 years?
    _____

Part 2

	WORKING SPACE

15. If 12% of $x = y$, what is the value of:

    a. x% of 12? _____

    b.   24% of x? _____

    c.   150% of x? _____

16. A car is sold for a profit of 20%. If the car was sold for $30 000, how much profit was made on the car?

Part 1

Working space

14. Bryce had a bag of 135 marbles. He gave $\frac{2}{5}$ of the to his brother and divided the rest between himself and two friends. How many of the marbles did Bryce retain?   **27 marbles** ✓

15. Find two numbers that have a product of 32·64 and a sum of 18·32.   16.32 · 2 ✓

Working:
mean $\frac{2}{5} \times 135 = 54$
$135 - 54 = 81$
or $\frac{3}{5} \times 135 = 81$
$81 \div 3 = 27$ Not
54 — brother
$3\overline{)81}$ 27
16.32
9.16

Part 1

Name: __Solutions__

1. Insert <, > or = to make each of the following statements true.
   a. $\frac{3}{8}$ [>] 0·5 ✓
   b. $4\frac{4}{7}$ [<] 4·8 ✓
   c. 0·0909 [<] 0·9009 ✓
   d. $12\times3 + 9$ [<] 36

2. Complete, using index notation:
   a. $9 \times 9 \times 9 = 9^3$ ✓
   b. $3 \div 3^5 = 3^8$
   c. $2^2 \times 2^6 = 2^8$
   d. $5\times5\times4\times5\times6 = 4^1 \times 5^4$
   e. $(3^2)^5 = 3^{10}$

3. Simplify, leaving your answers in index form:
   a. $8^7 \times 8^3 = 8^{10}$ ✓
   b. $2\times2^3\times2^2 = 2^6$ ✓
   c. $\dfrac{10\times10\times10}{10^5} = \dfrac{1}{10}$ ✓
   d. $(5^3)^4 = 5 \cdot 8$ ✓
   e. $\dfrac{6^{13}}{6^4} = 6^3$ ✓

4. Evaluate:
   a. $16 \div \frac{2}{3} = 24$ ✓
   b. $2\frac{1}{4} \times 4\frac{3}{4} = 10.6875$ ✓
   c. $9 \times (12 - 3^3) = -135$ ✓
   d. $3^4 = 81$ ✓
   e. $\sqrt[3]{-64} = -4$ ✓

5. Evaluate, correct to 2 decimal places:
   a. $2\cdot8^4 - (12\times3\cdot4 \div (5\cdot4 + 3\cdot2 \times 0\cdot234^2)) = 54.16$ ✓
   b. $\dfrac{12^2}{24-17} = 22.14$ ✓ (9a)

Working (bottom left):
$= 2\cdot8^4 - (12\times3\cdot4 \div (5\cdot58))$
$= 2\cdot8^4 - (40\cdot8 \div 5\cdot58)$
$= 2\cdot8^4 - 7\cdot31 =$
$5^2 \times 5^2 \times 5^2$

---

c. $\dfrac{5\cdot6^3}{\sqrt{7\cdot08 + 34\cdot7 \times 2\cdot01}} = 20.04$ ✓

6. Convert 357 minutes into hours and minutes.   __5 hours and 57 minutes__

7. Write 12·6708 hours correct to the nearest:
   a. second __12h 40min 15sec__
   b. minute __12h 40min__

8. Find $8\text{ h } 2\text{ min } 45\text{s} - 3\text{ h } 57\text{ min } 54\text{s}$ = 4hrs 4mins 51secs

9. A phone operator answers 231 calls on Monday, 56 calls on Tuesday, 149 calls on Wednesday and a total of 987 for the week.
   a. How many calls were made on Thursday and Friday? __551 calls__
   b. If each phone call lasted 156 seconds, how long did the operator spend on the phone on Thursday and Friday? 23hrs 52mins 36secs

10. A frog named Bertha jumps 4 metres on her first jump, 2 m on her second, 1 metre on her third jump, and continues to jump $\frac{1}{2}$ the distance of the previous jump each time. Use your calculator to find the distance that Bertha is trying to cover. 7·875 8m

11. A company decides to share its $8·04 million dollar profit equally between its 1567 employees. How much does each employee receive, correct to the nearest dollar? $5130621 $5131

12. The square root of a whole number lies between 8·6 and 8·7. What could the number be? __74/75__

13. Give 3 decimals that, when rounded to 3 decimal places, become 0·982.
   0·982 ✓
   0·9819 ✓
   0·9824 ✓   (9)

Working (bottom right):
244mins 245mins 7·75 7·81
51sec   859·56 × 85
23hours 52mins 14·32mins 36s

PART 2

Name: _____

1. Express as a percentage:
   a. 0·6 __60%__ ✓
   b. $\frac{1}{2}$ __50%__ ✓
   c. $\frac{3}{4}$ __75%__ ✓
   d. $\frac{1}{3}$ __33·33%__ ✗ ƒ(r) *must WRITE 33⅓% or 33·3%*
   e. 0·125 __12·5%__ ✓

2. Answer each of the following as either true (T) or false (F).
   a. 70% > $\frac{3}{4}$ __F__ ✓
   b. $\frac{3}{200}$ = 1·5% __T__ ✓
   c. 0·05 = $\frac{1}{20}$ __T__ ✓
   d. $\frac{2}{5}$ < 40% __F__ (=) ✓
   e. x% of y = y% of x __T__ ✓

3. Write the following in ascending order:
   $\frac{1}{4}$, 40%, 14, 12½%, $\frac{3}{10}$

   __12½%, ¼, ³⁄₁₀, 40%, 14__ ✓

4. Give a percentage that lies between $\frac{1}{4}$ and $\frac{1}{5}$.
   __23%__ ✓

5. Find:
   a. 12% of 4000 m = __480__ ✗
   b. 3% of $560 = __$16·80__ ✓
   c. 6¼% of 8·9 kg = __0·556 kg__ ✓
   d. 101% of 5 mL = __5·05__ ✓
   e. 7½% of $9.46 = __71¢__ ✓

6. a. Increase $25 by 10% = __$27·50__ ✓
   b. Decrease $48 by 5% = __$45·60__ ✓
   c. Increase $107 by 12½% = __$120·38__ ✓
   d. Increase $3 by 250% = __10·5__ ✓

(circled) 7g

3

7. Decrease $40 by 6% and then increase the result by 6%. ✓
   __$39·86__

8. A fruitshop owner buys a box of 24 mangoes for $9. At what price should he sell each mango if he wishes to make a 30% profit?
   __~~37¢~~ 48¢__ 50¢ cash   11·7

9. A shop offers a discount of 20% off the cost of a pair of shoes worth $89.95. Find the sale price of the shoes.
   __$71·96__ ✓

10. In May, a pie cost $1.80 at the school canteen. On 1 June, the price of a pie went up to $2.40. Calculate the percentage increase in the price of a pie.
    __$ 33⅓%__ ✗ *33⅓%*

11. a. Carly earns 3% commission on the value of all sales. Find her commission for a week in which her sales total $54 680.
    __$ 1640·4__ ✓

    b. What would her sales need to be in order for her commission to be over $750 for any given week?
    __$25 000__

12. Michael earns $500 per week plus 1½% commission on the value of sales over $100 000. How much does Michael earn in a week in which his sales total $150 000?
    __$1250__

13. Calculate the simple interest earned on $7000 invested at 6¼% p.a. for:
    a. 4 years __1750__
    b. 30 months __1093·75__

14. What is the flat interest rate needed for $5000 to double in 10 years?
    __|0.__ *(circled) 3*

Part 2   WORKING SPACE

15. If 12% of x = y, what is the value of:
    a. x% of 12? __y__
    b. 24% of x? __2y__ ✓
    c. 150% of x? __12·5y__ ✓

16. A car is sold for a profit of 20%. If the car was sold for $30 000, how much profit was made on the car?
    __$25 000__

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