

1. Mental Math

E.11808



Compléter les pointillés :

a $24 \div 2 = 36 \div \dots$

b $25 \div 5 = \dots \div 3$

c $49 \div \dots = 56 \div 8$

d $64 \div 8 = \dots \div 2$

2. Review: Euclidean division, 1-digit divisor

E.11793



1 Compléter la table de multiplications suivante :

$\times 3$					
41		46		51	
42		47		52	
43		48		53	
44		49		54	
45		50		55	

2 a Combien de fois le nombre 3 rentre dans 139? Combien reste-t-il?

b Combien de fois le nombre 3 rentre dans 155? Combien reste-t-il?

3 En donnant votre réponse sous la forme :

$$\text{Dividende} = \text{Quotient} \times \text{Diviseur} + \text{Reste}$$

a Donner la division euclidienne de 137 par 3.

b Donner la division euclidienne de 163 par 3.

E.3870



Pose and perform the following Euclidean divisions :

a 507 by 9

b 1243 by 3

3. Euclidean Division: 2-Digit Divider

E.1572



1 Complete the following multiplication table :

$\times 12$					
0		5		10	
1		6		11	
2		7		12	
3		8		13	
4		9		14	

2 For each of the integers 75, 143 and 166 :

a Specify the maximum number of times the integer 12 fits into each.

b Deduce the Euclidean divisor written as :
 $\text{Dividend} = (\text{Quotient} \times 12) + \text{Reste}$

E.1569



1 Complete the following multiplication table :

$\times 13$					
0	0	5		10	
1		6		11	
2		7		12	
3		8		13	
4		9		14	

2 Perform the following Euclidean divisions :

78 by 13 ; 174 by 13 ; 168 by 13

E.9941



Pose and perform the following Euclidean divisions :

a 1166 by 12

b 1024 by 16

4. Euclidean Division: Problems

E.11455



1 Effectuer la division euclidienne de 1482 par 7.

2 Combien de fois le nombre 7 rentre au maximum de fois

dans 1482?

E.11456



Un fermier ramasse les oeufs pondus par ses poules durant la nuit. Il en compte 748!

Il compte les ranger dans des boîtes contenant chacune une douzaine d'oeufs.

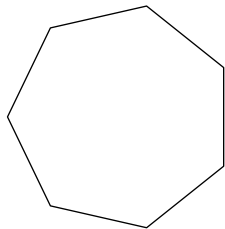
Il possède 65 boîtes.

- 1 Combien de boîtes complètes, le fermier pourra-t-il confectionner?
- 2 A-t-il suffisamment de boîtes pour ranger tous ses oeufs?

E.11794



- 1 L'**heptagone régulier** est un polygone à 7 sommets (*donc 7 côtés*) dont tous les côtés ont même longueur. Justifier qu'un heptagone, dont le périmètre à 56 cm, a tous ses côtés de longueur entière.



- 2 a Compléter les divisions euclidiennes ci-dessous où sont indiqués les dividendes et les diviseurs :
 - $56 = \dots \times 3 + \dots$
 - $56 = \dots \times 4 + \dots$
 - $56 = \dots \times 5 + \dots$
 - $56 = \dots \times 6 + \dots$
 - $56 = \dots \times 7 + \dots$
- b Parmi les polygones réguliers ci-dessous, lesquels ont

un périmètre de 56 cm et leur mesure de leurs côtés, en centimètre, est une valeur entière :

Définition :

Nombre de côtés	Nom du polygone régulier
3	triangle équilatéral
4	carré
5	pentagone régulier
6	hexagone régulier
7	heptagone régulier

E.11795



Claire, la bibliothécaire, doit accueillir les cinq classes de sixième au CDI. Elle prépare l'espace de travail pour former le maximum de groupes de 6 personnes autour d'une table.

Chaque classe comporte exactement 26 élèves et chaque élève doit être à une table.

Sur chaque table de travail, elle dépose 7 manuels de différentes matières pour que les élèves effectuent leur recherche.

Combien de manuels doit-elle préparer pour cette séance de travail?

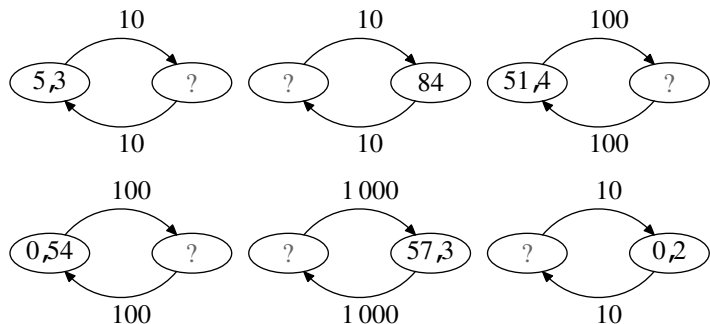
Indication : toutes traces de recherche et de prise d'initiative même incomplète seront prises en compte dans l'évaluation.

5. Division by 10, 100, 1000

E.9943



- 1 Complete the diagrams below :



- 2 Using the previous question, copy and complete the following calculations :

- | | |
|----------------------------|---------------------------|
| a $\dots \div 10 = 5.3$ | b $84 \div 10 = \dots$ |
| c $\dots \div 100 = 51.4$ | d $\dots \div 100 = 0.54$ |
| e $57.3 \div 1000 = \dots$ | f $0.2 \div 10 = \dots$ |

E.6696



Using mental arithmetic, perform the following operations :

- | | | |
|-------------------|--------------------|--------------------|
| a $546 \div 10$ | b $0.345 \div 10$ | c $24.5 \div 100$ |
| d $1035 \div 100$ | e $1000 \div 1000$ | f $547.1 \div 100$ |

E.9916



Using mental arithmetic, perform the following calculations :

- | | |
|----------------------|---------------------|
| a $2.4 \div 100$ | b $34.15 \div 1000$ |
| c $754.1 \div 10000$ | d $7 \div 100$ |

E.2319



Using mental arithmetic, complete the following calculations :

- | | |
|---------------------------------------|------------------------------------|
| a $4.213 \div \blacksquare = 0.04213$ | b $721 \div \blacksquare = 7.21$ |
| c $917.4 \div \blacksquare = 0.9174$ | d $5.41 \div \blacksquare = 0.541$ |

E.6326



We consider the following two calculation programs :

Program A

- Choose a number.
- Multiply it by 10.
- Divide the result by 10
- Display the result

Program B

- Choose a number.
- Multiply it by 100.
- Divide the result by 100
- Display the result

- 1 If we choose the number 15, what is the number returned by each of these calculation programs?
- 2 If we choose the number 4, what is the number returned by each of these calculation programs?
- 3 What can we say about these two calculation programs?

E.9944    Complete the following sentences:

- Dividing a number by 10 is equivalent to shifting the

decimal point from to

- Dividing a number by 100 is equivalent to shifting the decimal point from to

6. Multiplication and division by 10, 100, 1000

E.1492    Using mental arithmetic, perform the following calculations:

- (a) $1.5 \times 1\,000$ (b) $25.143 \div 100$ (c) 0.0012×10
 (d) $0.87 \div 100$ (e) $1.324 \div 100$ (f) 0.3×100

E.1495    Using mental arithmetic, perform the following calculations:

- (a) $2.7 \times 10\,000$ (b) $354.89 \div 1\,000$ (c) 0.005×10
 (d) $0.064 \div 100$ (e) $25.79 \div 1\,000$ (f) $0.214 \div 10$

E.6579    Using mental arithmetic, perform the following operations:

- (a) 54.3×100 (b) 0.86×1000 (c) 49×10
 (d) $748 \div 1000$ (e) $0.45 \div 100$ (f) $91.6 \div 10$

E.1496    Using mental arithmetic, perform the following calculations:

- (a) $12.541 \times 10\,000$ (b) $0.12 \div 1\,000$
 (c) 2.243×10 (d) $21.245 \div 100$

E.1472    Using mental arithmetic, perform the following calculations:

- (a) $2.56 \div 10$ (b) $1.5 + 100$ (c) $3.1 \times 1\,000$
 (d) $12 \div 1\,000$ (e) $1841 - 100$ (f) $3.54 \times 10\,000$

E.1469    Using mental arithmetic, perform

the following calculations:

- (a) $354 \div 10$ (b) $27 + 100$ (c) 0.564×100
 (d) $25 \div 1\,000$ (e) $1946 - 100$ (f) $2.5 \times 10\,000$

E.3513    Using mental arithmetic, perform the following calculations:

- (a) 35.14×100 (b) $0.024 \div 10$
 (c) $98.75 \div 1\,000$ (d) $0.03524 \times 10\,000$

E.1499    Using mental arithmetic, complete the following calculations:

- (a) $51 + \dots = 151$ (b) $51 \div \dots = 0.51$
 (c) $12.3 \times \dots = 123$ (d) $25.143 \div \dots = 0.25143$
 (e) $13 \times \dots = 13\,000$ (f) $75 \div \dots = 0.075$

E.9973    Using mental arithmetic, complete the blanks below:

- (a) $\dots \times 1\,000 = 95.4$ (b) $\dots \times 100 = 0.54$
 (c) $\dots \div 10 = 54$ (d) $\dots \div 1\,000 = 3.51$

E.6580    Using mental arithmetic, complete the following blanks:

- (a) $5.54 \times \dots = 554$ (b) $\dots \times 0.015 = 1.5$
 (c) $12.1 \times \dots = 12\,100$ (d) $0.45 \div \dots = 0.045$
 (e) $978 \div \dots = 0.978$ (f) $45.54 \div \dots = 0.004\,545$

7. Numbers of tenths, hundredths, thousandths

E.2147    The number 32.45 can be written in several ways:

- Fractional decomposition: $32.45 = 32 + \frac{4}{10} + \frac{5}{100}$
- Fractional writing: $32.45 = \frac{3245}{100}$

From the two previous entries, determine the answer to the following questions:

- What is the hundredths digit of this number?
- How many hundredths does this number include?

E.9888    Consider the number $A = 63.5491$:

- Copy and complete the blanks:
 $63.5491 = \frac{\dots}{100} + \frac{9}{1\,000} + \frac{1}{10\,000}$; $63.5491 = \frac{\dots}{1\,000} + \frac{1}{10\,000}$
- How many hundredths does the number A contain? How many thousandths does the number A contain?

E.9893    Consider the number $A = 27.06$.

- Give the decimal fraction decomposition of the number A .
- Give the number of hundredths of the number A . Determine the number of hundredths contained in A .

E.9965    Consider the number $A=0.91$.

- 1 Give the decimal fraction decomposition of the number A .
- 2 Give the number of hundredths of the number A . Determine the number of hundredths contained in A .

E.3389    On each of the tables below, the labels (*tenfold D*, *unit U*, *tenth d...*) have been erased; using the indications given, replace the decimal point in the decimal writing of the numbers and correctly complete the first line of the table with the missing labels:

- 1 This number has fifty tens.

				5	0	0	1	2

- 2 The hundredths digit of this number is zero.

			3	3	0	1		

8. Exact decimal division

E.2375    Place the following divisions to determine the exact value of their quotients.

- (A) $35.12 \div 4$ (b) $35.1 \div 6$

E.3871    Place the following divisions to determine the exact value of their quotients.

- (a) $129 \div 4$ (b) $88.48 \div 7$

E.2854    Place the following divisions to determine the exact value of their quotients.

- (A) $60.08 \div 8$ (b) $213.9 \div 6$

E.10428    Pose the following divisions to determine the exact value of their quotients:

- (a) $142.3 \div 4$ (b) $606.9 \div 7$

E.11059    Pose the following divisions to determine the exact value of their quotients:

- (a) $705 \div 6$ (b) $337 \div 8$

E.1579   

- 1 Construct the multiplication table for the integer 14. (*from 14 to 140*)
- 2 Place the following divisions to determine the exact value of their quotients.

- (a) $732.2 \div 14$ (b) $436.8 \div 14$

- 3 The number of thousandths of this number is one hundred and ninety-one.

				1	9	1		

- 4 This number has seventy nine hundreds.

	7	9	1	0	5			

- 5 The hundredths digit of this number is nine.

					9	7	8	5

E.9946    Place the following divisions to determine the exact value of their quotients.

- (a) $17457 \div 12$ (b) $945 \div 12$

E.9945    Place the following divisions to determine the exact value of their quotients.

- (a) $2046 \div 12$ (b) $843 \div 12$

E.2374    Place the following divisions to determine the exact value of their quotients.

- (A) $567 \div 14$ (b) $531 \div 18$

E.6652    Place the following divisions to determine the exact value of their quotients.

- (A) $8.16 \div 12$ (b) $84.56 \div 7$

E.10512    The following decimal divisions have been performed, but some information has been erased. Only remainders, quotients and factors are still displayed:

(a)	...	4		(b)	...	6	
		13.74				15.2	
	3				1		

Determine the dividend of each of these divisions.

9. Problems with exact decimal divisions

E.1593   

- 1 **On division-quotient:** A school has 892 pupils. The school takes all its students on a field trip. Each rented bus has 42 seats. How many buses will be full? How many free seats will be left on the last bus?

- 2 **On division-sharing:** Three sisters go to the market and buy a silk fabric 11.4 meters long. They divide the purchase into three equal parts.

How much will each sister's fabric measure?

E.1602    John rides his bike 5 times a week to school.

At the beginning of the week his meter reads 202 *km* while at the end of the same week it reads 228.5 *km*.

Calculate the distance from John's house to his school.

E.9975   

- 1 **On the division-quotient:** for Raphael's birthday, his mother buys bottles of Champoungny at the market and champagne flutes to serve the guests:

- A bottle of Champoungny has a capacity of 1.65 *ℓ*.
- Each flute has a capacity of 15 *cl* (0.15 *ℓ*).

- a How many people will Raphael's mother be able to serve with one bottle?
- b Knowing that there will be 30 guests, how many bottles will she need to provide?

- 2 **On the division-share:** At the end of a meal at a restaurant, eight friends find themselves paying a bill of 66.80 €.

Dividing the price of the meal equally, help them figure out how much each of them should pay.

E.1603   

- 1 Claire bought a large 1.6 kilogram chicken at 36 pesos. What is the price per kilogram of chicken?

- 2 At the same merchant, how much would a 2.2 kilogram chicken cost?

E.6651    Hadéja wants to know the length of her bedroom. To do this, she needs the following information:

- She takes 13 steps to cover the length of her room.
- Her width is exactly 5.2 *m* and she travels it taking exactly 8 steps.

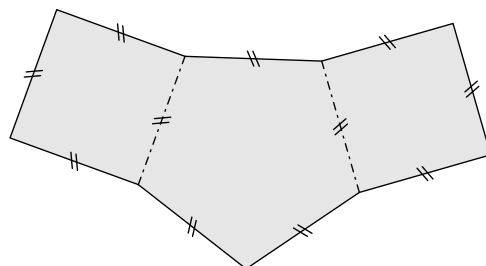
We'll assume that the steps taken by Hadéja are all the same

length.

Determine the length of Hadéja's chamber. (we'll leave the reasoning steps as well as the associated posed calculations)

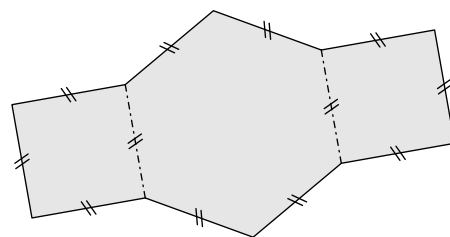
All traces of research or initiative will be taken into account in the assessment.

E.10419    Consider the figure below composed of a regular pentagon on which two squares have been leaned:



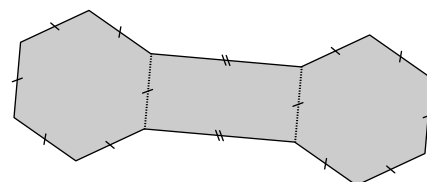
Knowing that the perimeter of the shaded figure has measure 21.6 *cm*, determine the measure of one side of the pentagon.

E.10420    The figure below is composed of a regular hexagon and two squares of the same length.



Knowing that the shaded figure has a perimeter of 56.5 *cm*, determine the measurement of one side.

E.10476    Consider the figure below:



where:

- the rectangle has a length measuring twice its width.
- two regular hexagons whose sides measure the width of the rectangle.

Knowing that the perimeter of the shaded figure has measure 50.4 *cm*, determine the length of each side of the hexagon.

10. First steps towards equations

E.1340    In Paris in 2005, Alain bought 14 metro tickets for 19.6 €. We note *x* the price of a ticket.

- 1 Which equality is verified by *x* among?
- a $19.6 + x = 14$ b $14 + x = 19.6$
- c $14 \times x = 19.6$ d $19.6 \times x = 14$
- 2 Determine the value of *x*.

E.1605    In this exercise, "*x*" represents a number which checks the equality below:

$$(6 \times x) + 12 = 27$$

What is the value of this number?

E.9974    nelise went to the market to buy three kilos of orange and a salad for a total of 5.7€. The salad cost 1.2€. We note x the price of a kilo of oranges.

- ① What is the equality verified by x among?

a $(1.2 \times x) + 3 = 5.7$ b $(3 \times x) + 1.2 = 5.7$

c $(5.7 \times x) + 1.2 = 3$ d $(1.2 \times x) + 5.7 = 3$

- ② Determine the value of x .

11. Rounded decimal division

E.11093   

- ① Divide 227 by 7 to obtain the quotient to the thousandth.
 ② Give the frame to the nearest hundredth of this quotient.
 ③ Give the quotient of 227 by 7, rounded to the nearest hundredth.

E.11094    Perform the following divisions to obtain the quotients below, rounded to two decimal places:

a $105.5 \div 7$ b $94 \div 3$

E.1583    Perform the following divisions to obtain the values of their quotients, rounded to the nearest tenth:

A $146 \div 7$ b $158 \div 7$

E.11061    Place the following divisions in order to obtain the value, rounded to the nearest thousandth, of their quotients:

a $148 \div 7$ b $51.25 \div 6$

E.9949    Form the following divisions and give the values, rounded to the nearest hundredth, of their quotients:

a $124 \div 6$ b $0.152 \div 8$

E.10429   

- ① Complete the table below to obtain the multiplication table for 13:

	$\times 13$				
0		4		8	
1		5		9	
2		6		10	
3		7			

- ② Determine the value rounded to the nearest hundredth of $140 \div 13$.

E.11060   

- ① Complete the table below to obtain the multiplication table for 14:

	$\times 14$				
0		4		8	
1		5		9	
2		6		10	
3		7			

- ② Determine the value rounded to the nearest thousandth of $524 \div 14$.

E.1599    Perform the following divisions to obtain the value rounded to two decimal places of their quotients:

a $32.7 \div 16$ b $0.2464 \div 16$

E.9950    Place the following divisions in order to obtain their quotients rounded to the hundredth:

A $927 \div 13$ b $467 \div 13$

E.11095    Place the divisions to obtain the quotients below, rounded to the nearest hundredth:

a $128.1 \div 16$ b $80.97 \div 16$

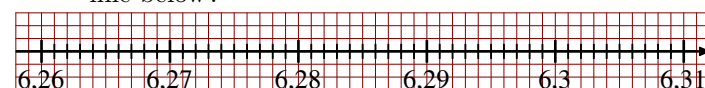
E.11140    Perform the following divisions to obtain the value rounded to two decimal places of their quotients:

a $8.44 \div 21$ b $53.1 \div 21$

E.10401    We wish to perform the approximate division of 44 by 7.

- ① Copy and complete the division shown opposite:
- ② a Complete the blanks below to frame the division of 44 by 7 to the nearest hundredth:
- $$\dots < 44 \div 7 < \dots$$

- b Place the point A of abscissa $A(44 \div 7)$ on the scaled line below:



- c Give the rounded value of the decimal division of 44 by 7 to the nearest hundredth.

12. Problems

E.6377 🌡️ 🍷 🛒 A shopkeeper sells a box of water for 0.50€ while a pack of 6 bottles for 2.73

What is the cost price of a bottle when it was purchased from a pack?

E.1535 🌡️ 🍷 🛒 The supermarkets *Croissement* offer on its promotional magazine a bag of 120 g dry sausage from Auvergne whose price is unfortunately not indicated. Only the price of this sausage per kilogram is indicated: 19.08 €/kg

- 1 a What is the price of 12 kg of sausage?
- b How many bags of 120 g can be designed with 12 kg of sausage?
- c Deduce the price of a bag of sausage?

- 2 Justify, without calculation, that the price of a bag of sausage can also be obtained by calculation: 0.12×19.08

E.11062 🌡️ 🍷 🛒 Adrien buys 6 kilograms of rice for 8.04€.

Iris would like to buy 3.5 kilograms of the same rice. How much will this cost?

E.6613 🍷 🛒 A farmers' association buys 15 kilograms of fertilizer at 7.34€ per kilogram. Then, they share this fertilizer among the 10 member of the association.

How much do each member have to contribute to make this purchase?

13. Open problems

E.5762 🌡️ 🍷 🛒 ⚠️

To build a complete shelf, a carpenter needs the following materials:

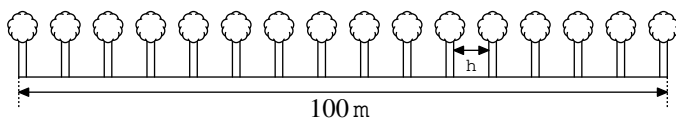


- 4 long boards;
- 6 short boards;
- 2 large brackets;
- 12 small squares;
- 14 screws.

The joiner has a stock of 26 long boards, 33 short boards, 200 small squares, 20 large squares and 510 screws.

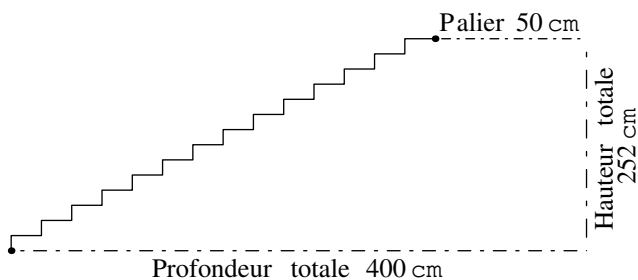
How many complete shelves can the carpenter build?

E.6371 🌡️ 🍷 🛒 An alley is 100 m long. We wish to plant 16 trees whose width is 4 m regularly spaced along the alley:



Determine the space (h) separating two trees.

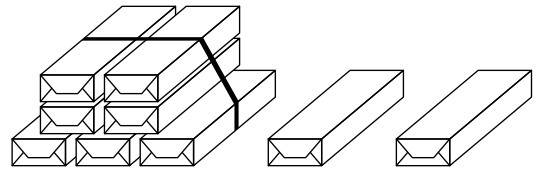
E.5761 🌡️ 🍷 🛒 Below is given a profile view of a staircase with 14 steps.



A carpenter needs to cover these steps with wood; to do this, he needs to know the length formed by the steps: this length is represented on the drawing by the broken line connecting the two points.

Give the measure of this length.

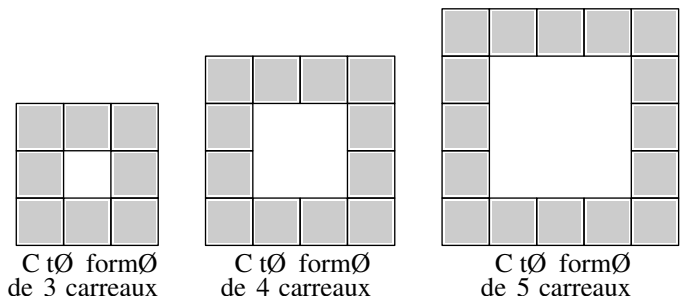
E.5763 🌡️ 🍷 🛒 In a grocery store, the shopkeeper wants to sell the remaining 125 packs of “choco-bon” as soon as possible.



To do this, he creates as many batches as possible, each containing 7 packets of cookies. A promotion is made on these batches: the 7^e packages of the batch are free. The other packages will be sold individually.

Knowing that a pack of “choco-bon” is sold at the price of 1.2€, determine the sum obtained by the sale of these 125 packs.

E.6357 🌡️ 🍷 🛒 We wish to construct a frame using small tiles. Here is a representation of three such frames:



- 1 How many tiles to build a frame:
 - a where each side is made of 6 tiles?
 - b each side of which is formed of 7 tiles?
- 2 What is the largest frame that can be constructed with 100 tiles?