education

Department of Education
FREE STATE PROVINCE

PROVINCIAL PRACTICAL TASK
PROVINSIALE PRAKTIESE TAAK

GRADE/*GRAAD* 11

PHYSICAL SCIENCES
FISIESE WETENSKAPPE

MEMORANDUM

MARCH/*MAAR*T 2017

TIME/*TYD*: 1 HOUR/*UUR*

MARKS/*PUNTE:* 40

This memorandum consists of FOUR pages.
Hierdie memorandum bestaan uit VIER bladsye.

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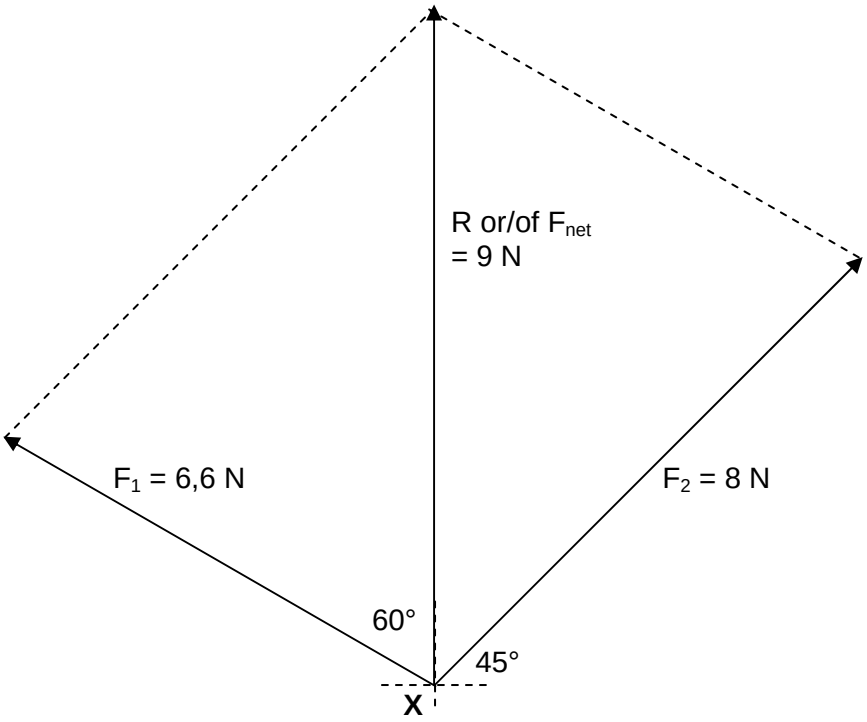
QUESTION 1/*VRAAG* 1

1.1 Mirror ✓ Spieël ✓ (1)

1.2 This construction is not necessarily accurate. Hierdie konstruksie is nie noodwendig akkuraat nie.

Scale/Skaal: 10 mm ⇒ 1 N



Marking criteria	**Nasienkriteria**
• Angles of F_1 and F_2 correctly constructed. ✓ • Magnitudes of F_1 and F_2 correctly constructed according to given scale: F_1: 66±0,5 mm ✓; F_2: 80± 0,5 mm ✓ • Parallelogram completed with tails of F_1 and F_2 (both arrow heads shown) at **X**.✓ • Diagonal constructed (with arrow head); tail at **X**. ✓ • Labels of all three forces indicated; similar to above. Magnitude of *R* must be given as well (8,9–9,1). ✓ • Two angles indicated correctly. ✓	• F_1 en F_2 se hoeke korrek gekonstrueer. ✓ • Grootte van F_1 en F_2 korrek gekonstrueer volgens gegewe skaal: F_1: 66±0,5 mm ✓; F_2: 80± 0,5 mm ✓ • Parallelogram voltooi met stert van F_1 en F_2 (beide pylpunte gewys) by **X**.✓ • Hoeklyn gekonstrueer (met pylpunt); stert by **X**. ✓ • Byskrifte vir al drie kragte aangedui; soortgelyk aan hierbo. Grootte van *R* moet ook gegee word (8,9–9,1). ✓ • Twee hoeke korrek aangedui. ✓

(7)

If construction is done with tail-to-head method: Max 5/7
Indien konstruksie met stert-by-kopmetode gedoen is: Maks 5/7

1.3 **Positive marking from construction.** **Positiewe nasien vanaf konstruksie.**
9 N ✓ downwards ✓ 9 N ✓ afwaarts ✓ (2)

1.4 Equilibrant ✓ Ekwilibrant ✓ (1)

1.5 Zero/Nil/0/0 N ✓ Zero/Nul/0/0 N ✓ (1)

1.6 Triangle ✓ Driehoek ✓ (1)

1.7 $w = mg$
$6,6 = m(9,8)$ ✓
$m = 0,67\ kg$ ✓

or/of

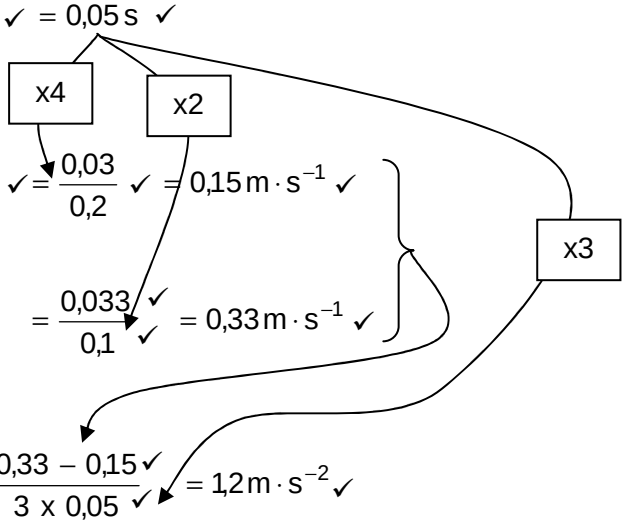
$9,8\ N \Rightarrow 1\ kg$
$6,6\ N \Rightarrow \frac{6,6}{9,8} \times 1$ ✓
$= 0,67\ kg$ ✓

(2)
[15]

QUESTION 2/*VRAAG* 2

2.1 Lift one end of the trolley track. ✓ Lig een kant van die trolliebaan. ✓ (1)

2.2 $T \overset{✓}{=} \frac{1}{f} = \frac{1}{20}$ ✓ $= 0,05\ s$ ✓ (3)



2.3 $\bar{v}(AX) = \frac{\Delta x}{\Delta t}$ ✓ $= \frac{0,03}{0,2}$ ✓ $= 0,15\ m \cdot s^{-1}$ ✓ (3)

2.4 $\bar{v}(XB) = \frac{\Delta x}{\Delta t} = \frac{0,033}{0,1}$ ✓✓ $= 0,33\ m \cdot s^{-1}$ ✓ (3)

2.5 $a = \frac{\Delta v}{\Delta t}$ ✓ $= \frac{0,33 - 0,15}{3 \times 0,05}$ ✓ $= 1,2\ m \cdot s^{-2}$ ✓ (4)

2.6.1 The 1/m coordinate of Q is less accurate than that of R. ✓ Die 1/m-koördinaat van Q is minder akkuraat as die van R. ✓ (1)

2.6.2 Gradient $= \frac{\Delta a}{\Delta 1/m}$ ✓
$= \frac{0,74 - 0,14}{0,62 - 0,12}$ ✓
$= 1,2\ N$ ✓

(4)

F_{net} instead of gradient is correct.
F_{net} in plaas van gradiënt is correct.

2.7 Net force/*netto krag* ✓ (1)

2.8 Acceleration is inversely proportional to mass. ✓ Versnelling is omgekeerd eweredig aan massa. ✓ (1)
[21]

QUESTION 3/*VRAAG 3*

3.1 Frictional force/Friction/ Static friction ✓ Wrywingkrag/Wrywing/ Statiese wrywingskrag ✓ (1)

3.2 Same ✓ Dieselfde ✓ (1)

3.3

$$f_s = \mu N$$
$$w\sin\theta = \mu w\cos\theta \ \checkmark$$
$$\mu = \tan\theta$$
$$= \tan 30^\circ$$
$$= 0{,}58 \ \checkmark$$

First mark only awarded if sin and cos are shown; not for basic equation.
Eerste punt word slegs toegeken as sin en cos gewys word; nie vir basiese vergelyking nie.

(2)
[4]

GRAND TOTAL/*GROOTTOTAAL*: 40