شكراً لتحميلك هذا الملف من موقع المناهج الإماراتية

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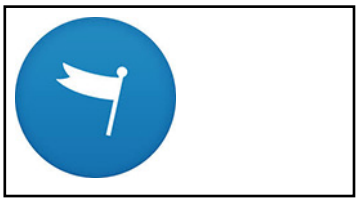
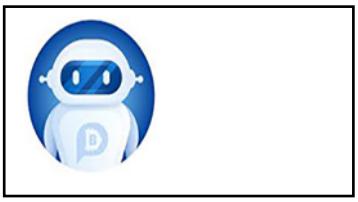
حل تجميعة أسئلة وفق الهيكل الوزاري

التواصل الاجتماعي بحسب الصف العاشر العام

روابط مواد الصف العاشر العام على تلغرام

التربية الاسلامية	اللغة العربية	اللغة الانجليزية	الرياضيات

المزيد من الملفات بحسب الصف العاشر العام والمادة فيزياء في الفصل الثاني

1	أسئلة الامتحان النهائي - بريدج
2	أسئلة الامتحان النهائي - بريدج
3	حل أسئلة الامتحان النهائي
4	نموذج مراجعة وفق الهيكل الوزاري
5	حل مراجعة وفق الهيكل الوزاري

GR 10 PHYSICS

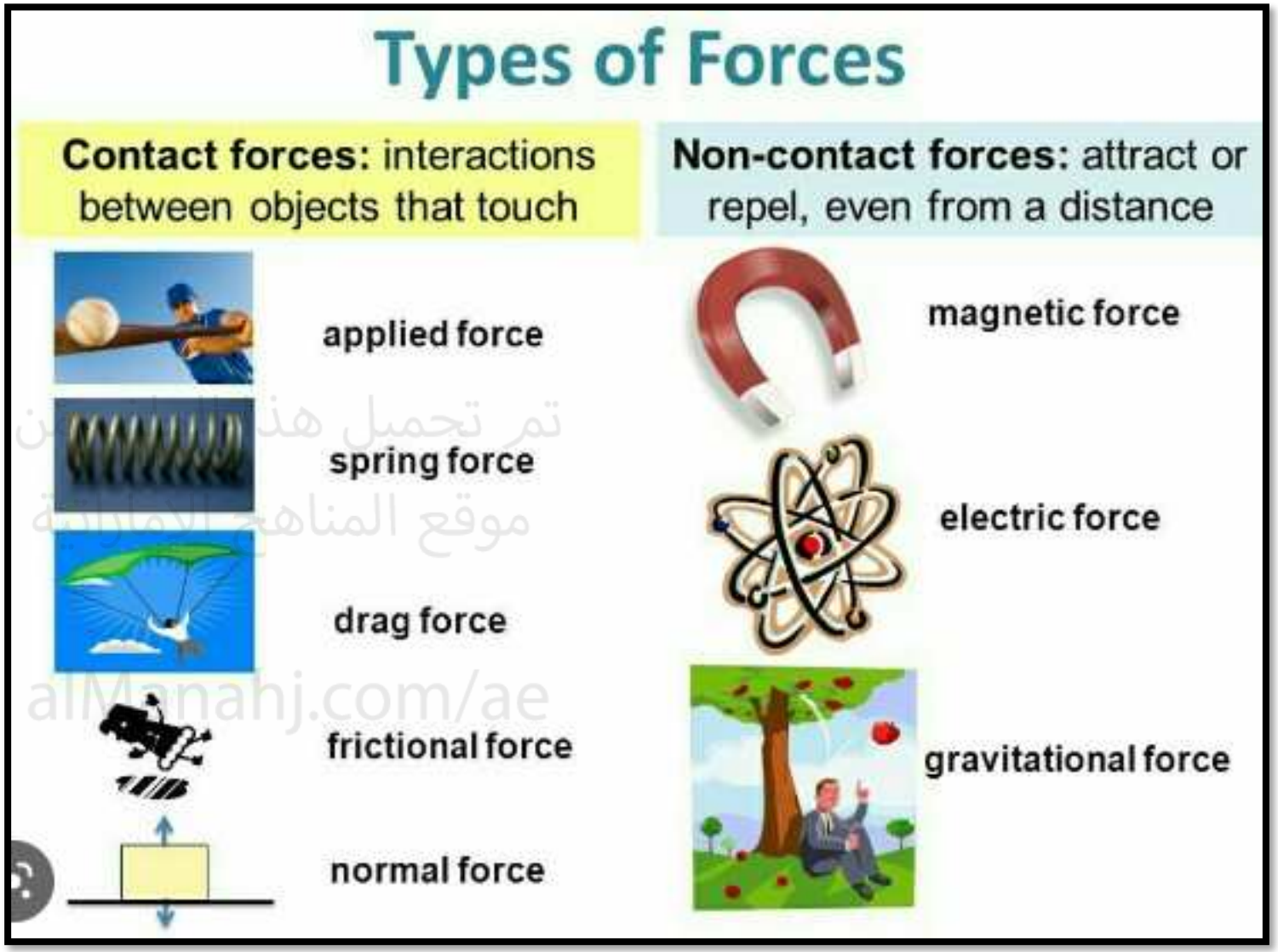
Term 2 Review

Petro Snyman
Al Khair School
Grade 10G

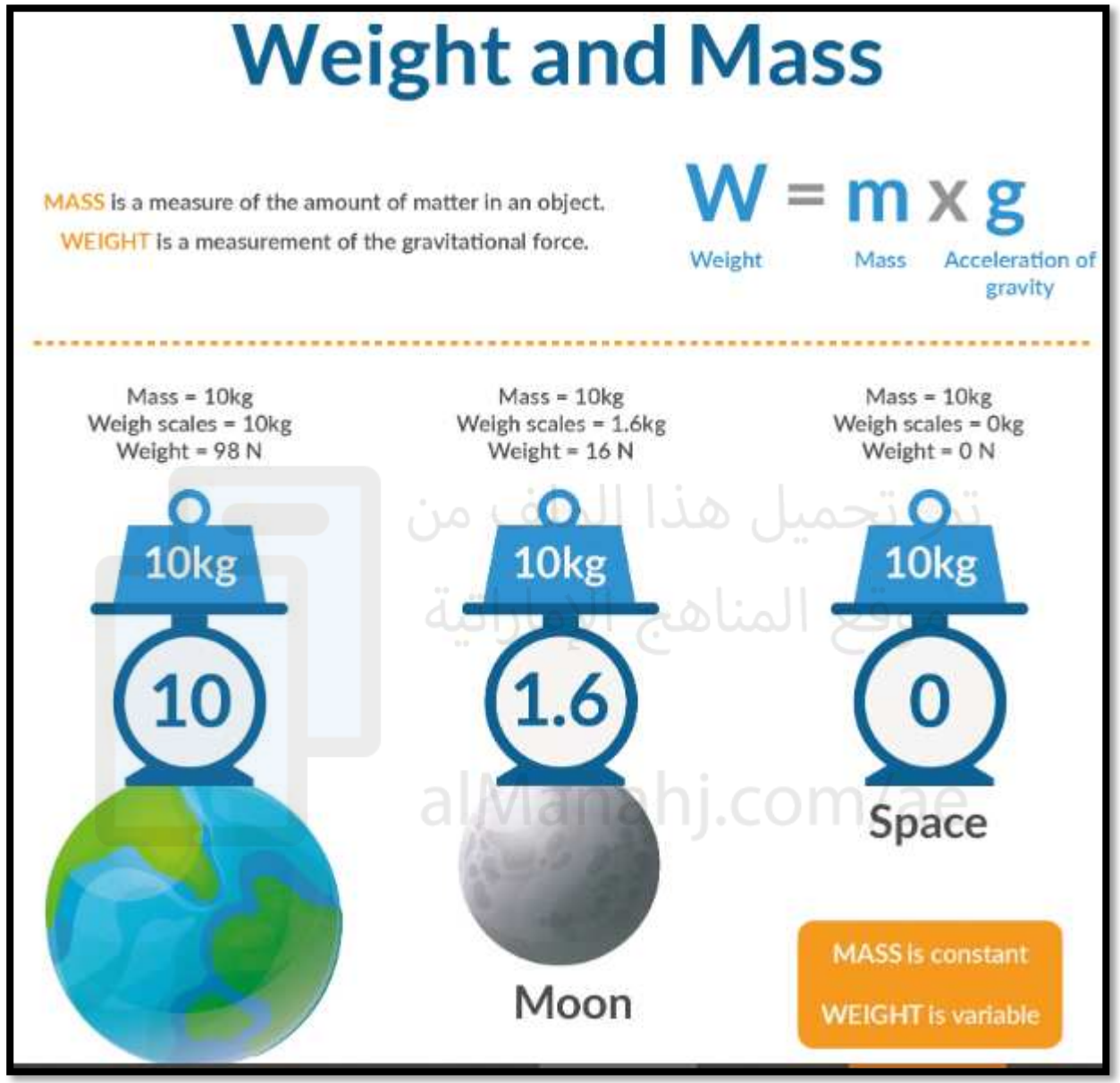
*	While the overall number of marks is 110, the student's final grade will be out of 100. Example: if a student scores 75 on the exam, the mark will be 75 and if (s)he scores 107, it will be reported as 100 (maximum possible grade).
*	مع أن مجموع العلامات الكاملة هو 110، فإن درجة الطالب(ة) النهائية تحتسب من 100. مثال: إذاكانت درجة الامتحان 75، ستبقى كما هي بينما إذا كانت درجة الامتحان 107 ستكون الدرجة 100 (الدرجة القصوى الممكنة).
**	Questions might appear in a different order in the actual exam, and bonus questions will be clearly marked on the system (or on the exam paper in the case of G3 and G4).
**	قد تظهر الأسئلة بترتيب مختلف في الامتحان الفعلي، وسيتم تحديد الأسئلة الإضافية بشكل واضح على النظام (أو على ورقة الامتحان في حالة الصفين G3 وG4).
***	As it appears in the textbook, LMS, and scheme of work (SoW).
***	كما وردت في كتاب الطالب وLMS والخطة الفصلية.
****	The 2 bonus questions will target LOs from the SoW. These LOs can be within the ones used for the main questions or any other ones listed in the SoW.
****	ستستهدف الأسئلة الإضافية نواتج التعليم من الخطة الدراسية. يمكن أن تكون النواتج التعليمية هذه ضمن تلك المستخدمة للأسئلة الرئيسية أو أي أسئلة أخرى مدرجة في الخطة الدراسية.

****Number of Bonus Questions عدد الأسئلة الإضافية	2
Marks per Bonus Question الدرجات لكل سؤال إضافي	5
*** Type of All Questions نوع كافة الأسئلة	Part(1 and 2) MCQ Part (3) FRQ
* Maximum Overall Grade الدرجة القصوى الممكنة*	110
Exam Duration - مدة الامتحان	120 minutes
Mode of Implementation - طريقة التطبيق	SwiftAssess & Paper-Based
Calculator	Allowed
الآلة الحاسبة	مسموحة

1	Classify forces as either contact forces or field forces and realize that they result from interactions caused by agents	As mentioned in the textbook	91
	تصنيف القوى على أنها إما قوى تلامس أو قوى مجالية وأدرك أنها ناتجة عن التفاعلات التي تسببها المؤثرات	كما هو مذكور في كتاب الطالب	



2	Relate the mass of an object to it's weight ربط كتلة الجسم بوزنه	As mentioned in question 2 كما هو مذكور في سؤال 2	104



20. On Earth, a scale shows that you weigh 585 N.

a. What is your mass?

b. What would the scale read on the Moon ($g = 1.60$ N/kg)?

a) $F_g = mg$

585 = m (9.8)

m = 59. 7 kg

b) $F_g = mg$

= (59.7) (1.6)

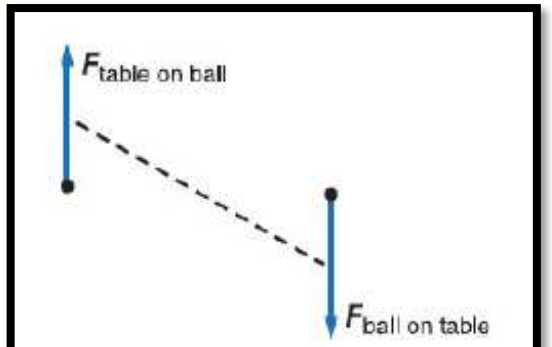
= 95.5 N

3	List the characteristics of the interaction pair and identify the action-reaction pairs for different situations	As mentioned in Fig 15	107
	خصائص زوج التفاعل بين الأجسام (الفعل ورد الفعل) وتحديد أزواج الفعل ورد الفعل في الحالات المختلفة	كما هو مذكور في الشكل 15	

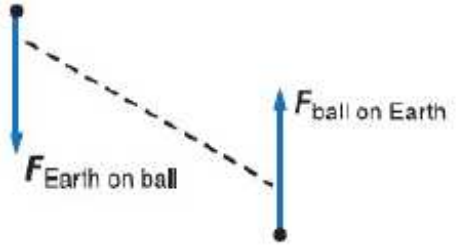
NEWTON'S THIRD LAW

The force of A on B is equal in magnitude and opposite in direction of the force of B on A.

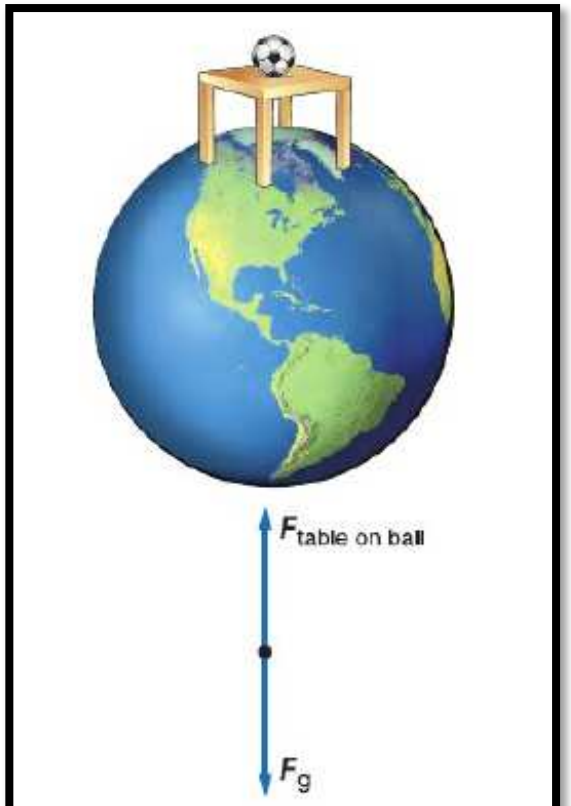
$$F_{\text{A on B}} = -F_{\text{B on A}}$$



Force interaction pair between ball and table.



Force interaction pair between ball and Earth.

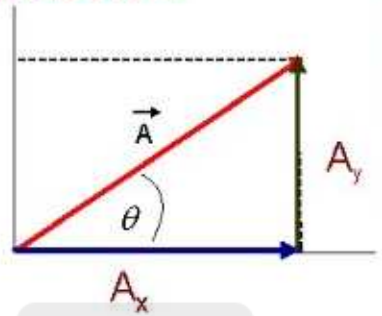


The two forces acting on the ball are $F_{\text{table on ball}}$ and $F_{\text{Earth's mass on ball}}$. These forces are not an interaction pair.

4	Determine the components of a vector in cartesian coordinate system using trigonometry.	As mentioned in Fig 6	127
	تحديد مركبات متجه في نظام الإحداثيات الديكارتية باستخدام حساب المثلثات.	كما هو مذكور في الشكل 6	

Vector Components

Any vector can be "resolved" into two *component* vectors.



How do we calculate A_x and A_y?

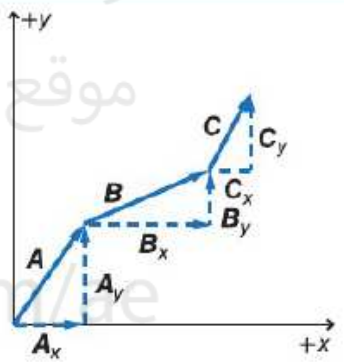
Use trig!

$\cos\theta = \frac{Ax}{A}$ $\sin\theta = \frac{Ay}{A}$

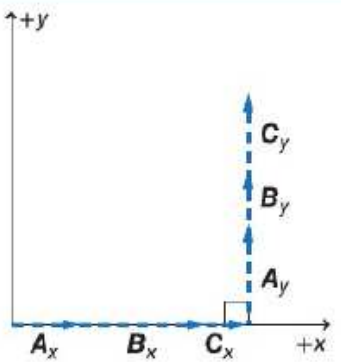
$A_x = A\cos\theta$ $A_y = A\sin\theta$

A_x is the horizontal component – or x component -- of the vector.

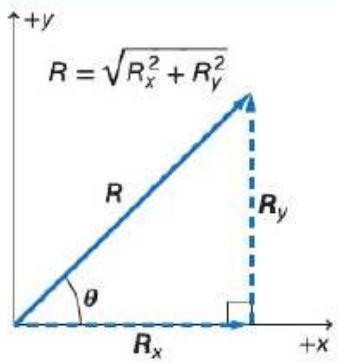
A_y is the vertical component – or the y component – of the vector.



Add the vectors graphically by placing them tip to tail.



Add the *x*-components together and the *y*-components together.



The magnitude of ***R*** can be calculated using the Pythagorean theorem.

Algebraic Addition of Vectors

Figure 6 The vector sum of ***A***, ***B***, and ***C*** is the same as the vector sum of R_x and R_y.

5	Relate graphically the frictional force to the normal force and find the coefficient of kinetic Friction.	As mentioned in Fig 12	131
	ربط بيانيًا قوة الاحتكاك بالقوة العمودية لايجاد معامل الاحتكاك الحركي.	كما هو مذكور في الشكل 12	

KINETIC FRICTION FORCE

The kinetic friction force equals the product of the coefficient of kinetic friction and the normal force.

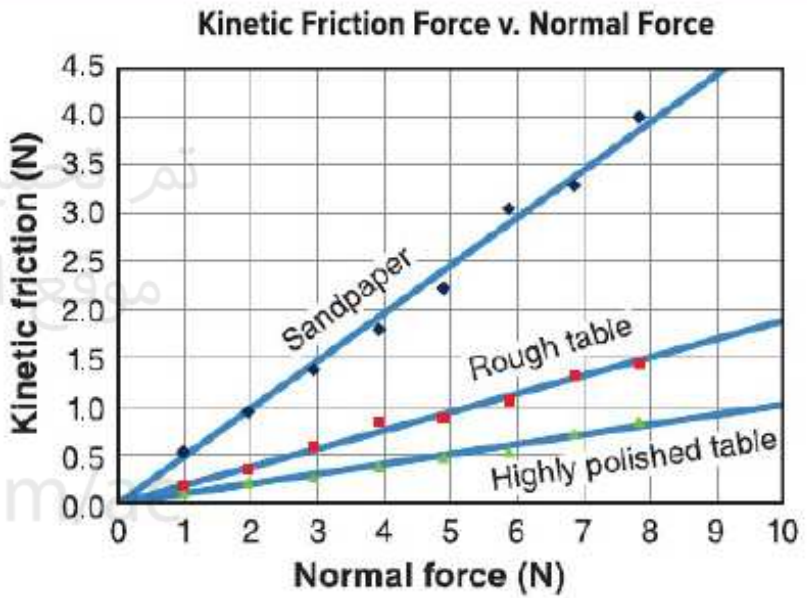
$$F_k = \mu_k F_N$$

Figure 12 A plot of kinetic friction v. normal force for a block pulled along different surfaces shows a linear relationship between the two forces for each surface. The slope of the line is μ_k.

Compare the coefficient of kinetic friction for the three surfaces shown on the graph.

Table 1 Kinetic Friction v. Normal Force (sandpaper)

Number of blocks	Normal force (N)	Kinetic friction (N)
1	0.98	0.53
2	1.96	0.95
3	2.94	1.4
4	3.92	1.8
5	4.90	2.3
6	5.88	3.1
7	6.86	3.3
8	7.84	4.0



$$\mu = slope = \frac{f_k}{F_N}$$

$$= \frac{y_2 - y_1}{x_2 - x_1}$$

6	Converting between different units to the basic units in the International System of Units	As mentioned in question 11	148
	التحويل بين الوحدات المختلفة إلى الوحدات الأساسية في النظام الدولي للوحدات	كما هو مذكور في سؤال 11	

111. You ride your bike for 1.5 h at an average velocity of 10 km/h, then for 30 min at 15 km/h. What is your average velocity?

Part 1:

$$v = \frac{d}{t}$$

$$10 = \frac{d}{1.5}$$

d = 15 km

Part 2:

$$v = \frac{d}{t}$$

$$15 = \frac{d}{0.5}$$

d = 7.5 km

Average Velocity:

$$v = \frac{total\ d}{total\ t}$$

$$= \frac{15 + 7.5}{1.5 + 0.5}$$

$$= \frac{22.5}{2}$$

Average v = 11.25 km/h

7	Perform an investigation to examine the forces that act on objects in free fall	As mentioned in Fig 12	105
	استقصاء القوى المؤثرة في الأجسام في حالة السقوط الحر	كما هو مذكور في الشكل 12	

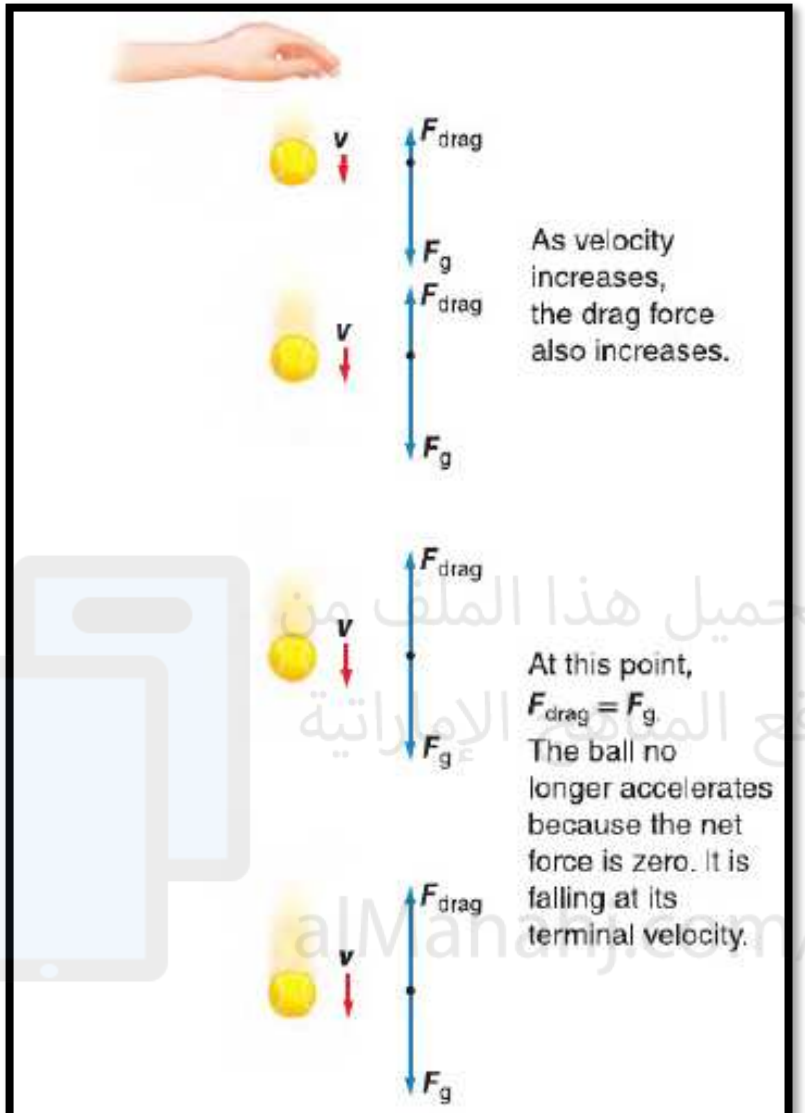


Figure 12 The drag force on an object increases as its velocity increases. When the drag force equals the gravitational force, the object is in equilibrium so it no longer accelerates.

The constant velocity that is reached when the drag force equals the force of gravity is called the **terminal velocity.**

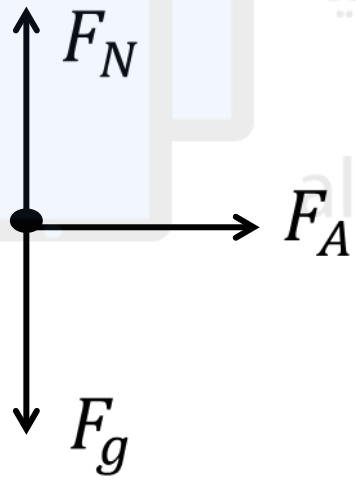
8	Apply Newton's Second Law to solve numerical problems	As mentioned in question 10	97
	تطبيق القانون الثاني لنيوتن لحل المسائل العددية	كما هو مذكور في سؤال 10	

Newton's Second Law

The force (F) acting on a moving object is the product of the mass (m) and acceleration (a)

$$F = ma$$

10. Kamaria is learning how to ice skate. She wants her mother to pull her along so that she has an acceleration of 0.80 m/s^2. If Kamaria's mass is 27.2 kg, with what force does her mother need to pull her? (Neglect any resistance between the ice and Kamaria's skates.)



$$F_{net} = m.a$$
$$= (27.2)(0.8)$$
$$= 21.76 \text{ N}$$

9	State the conditions for an object to be in equilibrium Apply Newton's laws to solve problems involving normal and tension forces including systems of objects connected by strings and Atwood's machine	As mentioned in question 41 As mentioned in question 84	114 117
	تحديد شروط الجسم ليكون في حالة اتزان تطبيق قوانين نيوتن لحل مسائل على قوى الشد والوزن بما في ذلك أنظمة الأجسام المتصلة ببعضها ببكرات بالخيوط وآلة أتوود	كما هو مذكور في سؤال 41 كما هو مذكور في سؤال 84	

41. What is the net force acting on a 1.0 kg ball moving at a constant velocity?

Net force = 0 N
Balanced forces = object will be stationary (stand still) or move at constant velocity

84. Two blocks, one of mass 5.0 kg and the other of mass 3.0 kg, are tied together with a massless rope as in **Figure 28.** This rope is strung over a massless, resistance-free pulley. The blocks are released from rest. Find the following:

a. the tension in the rope

b. the acceleration of the blocks

Hint: You will need to solve two simultaneous equations.

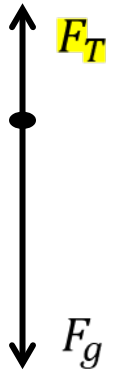
Figure 28

3 kg

3 kg moves up:

$$F_{net} = ma$$
$$F_T - F_g = ma$$
$$F_T - (3)(9.8) = 3.a$$
$$F_T - 29.4 = 3.a$$
$$a = \frac{F_T - 29.4}{3} \quad \text{.....(1)}$$

5 kg



5 kg moves down:

$$F_{net} = ma$$
$$F_g - F_T = ma$$
$$(5)(9.8) - F_T = 5.a$$
$$49 - F_T = 5.a$$
$$a = \frac{49 - F_T}{5} \quad \text{..... (2)}$$

a) Put (1) = (2):

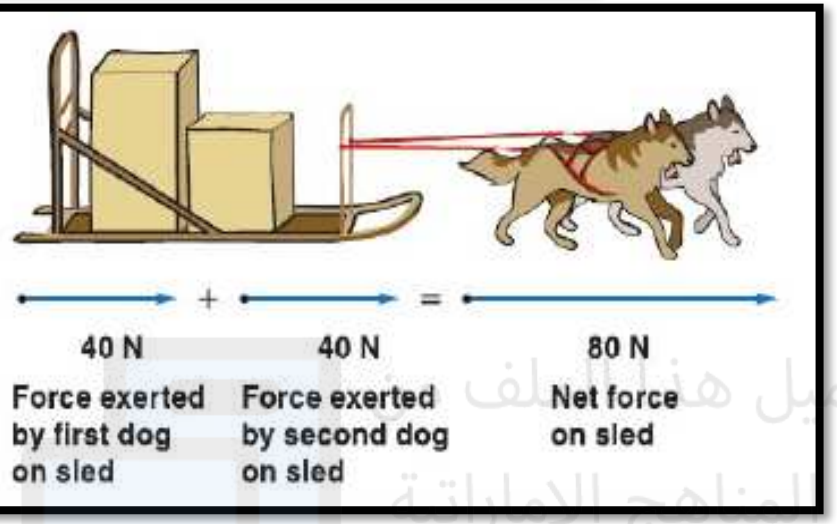
$$\frac{F_T - 29.4}{3} = \frac{49 - F_T}{5}$$
$$5(F_T - 29.4) = 3(49 - F_T)$$
$$5.F_T - 147 = 147 - 3.F_T$$
$$8.F_T = 294$$
$$F_T = 36.75 \text{ N}$$

b) Put T = 36/75 N into (1):

$$a = \frac{F_T - 29.4}{3}$$
$$= \frac{36.75 - 29.4}{3}$$
$$= 2.45\ m/s^2$$

10	Combine forces to find the net force acting on an object	As mentioned in the textbook	96
	جمع القوى لإيجاد القوة االمحصلة المؤثرة في جسم ما	كما هو مذكور في كتاب الطالب	

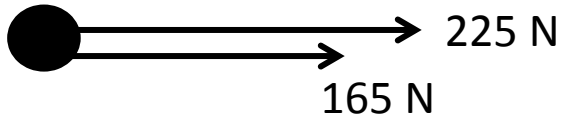
Figure 7 The net force acting on an object is the vector sum of all the forces acting on that object.



Steps to calculate net Force:

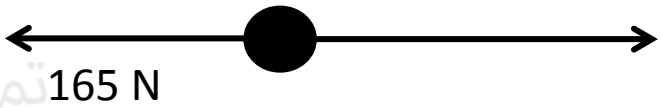
1) Draw free-body diagram
2) Add forces in same direction
3) Subtract forces in opposite direction

6)



$F_{net} = 225 + 165$
= 390 N, right

7)

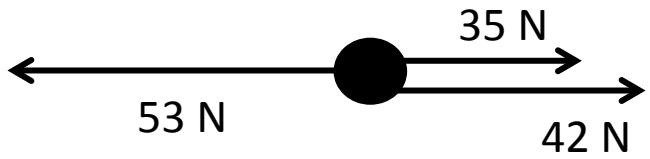


$F_{net} = 225 - 165$
= 60 N, right

APPLICATION

6. Two horizontal forces, 225 N and 165 N, are exerted on a canoe. If these forces are applied in the same direction, find the net horizontal force on the canoe.
7. If the same two forces as in the previous problem are exerted on the canoe in opposite directions, what is the net horizontal force on the canoe? Be sure to indicate the direction of the net force.
8. **CHALLENGE** Three confused sled dogs are trying to pull a sled across the Alaskan snow. One pulls east with a force of 35 N, another also pulls east but with a force of 42 N, and a big third dog pulls west with a force of 53 N. What is the net force on the sled?

8)

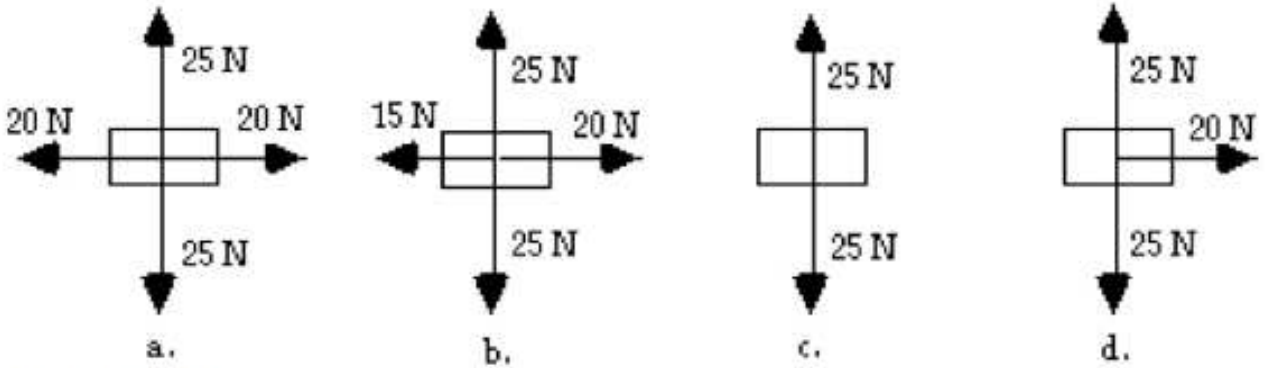


$F_{net} = 35 + 42 - 53$
= 24 N, East

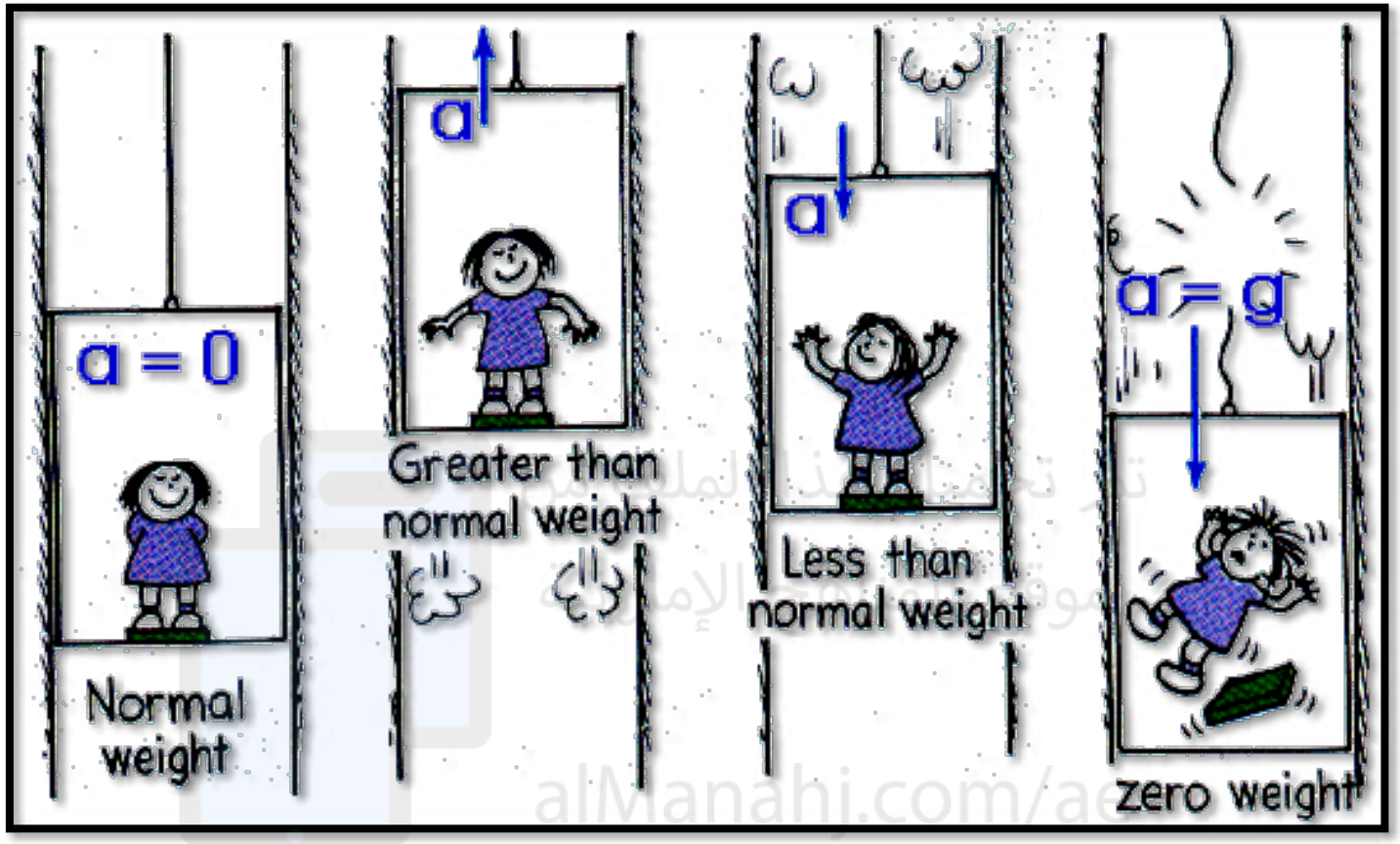
11	Use free body diagrams to compare the direction of an object's acceleration with the direction of the unbalanced force exerted on the object	As mentioned in the textbook	104
	استخدام مخططات الجسم الحر لمقارنة اتجاه تسارع الجسم مع اتجاه القوة غير المتوازنة المؤثرة في الجسم	كما هو مذكور في كتاب الطالب	

13. Which one(s) of the following free body diagrams depict an object accelerating to the right? Circle all that apply.

14. In the diagram above, which of the objects would be at rest? What must be true about the forces if an object is at rest?



12	Describe the apparent weight for an object accelerating vertically upward or downward (starts from rest, reaches a constant speed, then comes to a stop)	As mentioned in the textbook	102
	وصف الوزن الظاهري لجسم يتسارع رأسياً لاعلى أو لاسفل (يبدأ من السكون ، ويصل إلى سرعة ثابتة ، ثم يتوقف)	كما هو مذكور في كتاب الطالب	



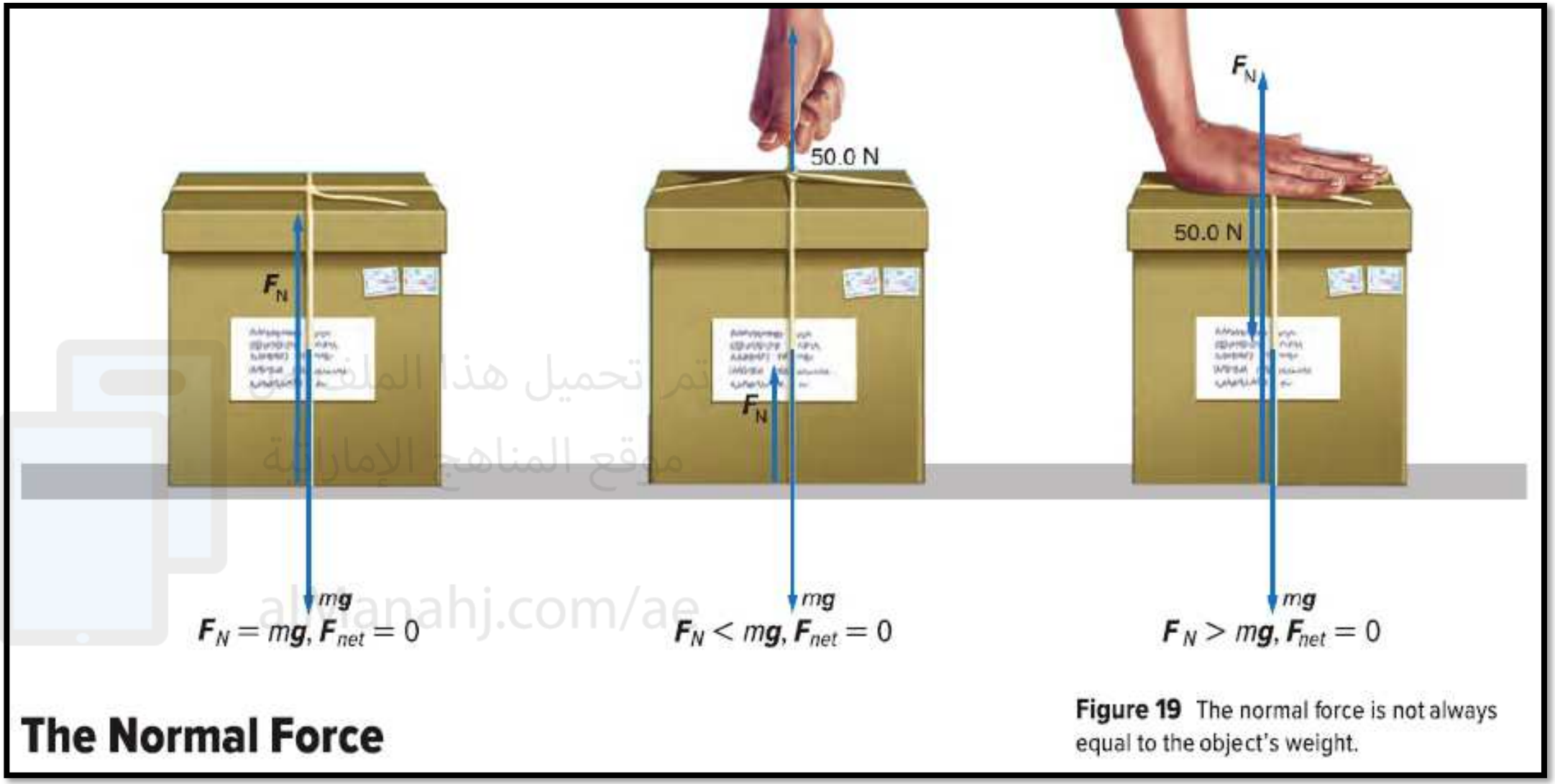
- **Apparent weight** is the support force exerted on an object (= the reading on the scale)
- Apparent weight (scale reading) depends on how you are **accelerating**.
  - **If you accelerate up:**

    scale reading › real weight
  - **If you accelerate down:**

    scale reading ‹ real weight
  - **If you are stationary or moving at constant velocity:**

    scale reading = real weight
- **Weightlessness:** when there are no contact forces acting to support the object and the object's apparent weight is zero. (the lift cable breaks, and it **falls** at **gravitational**

13	Define the normal force and use examples to show that the normal force is not always equal in magnitude to the weight of the object	As mentioned in Fig 19	111
	توضيح مفهوم القوة العمودية وتوظيف أمثلة لبيان أن القوة العمودية لا تساوي دائما وزن الجسم	كما هو مذكور في الشكل 19	

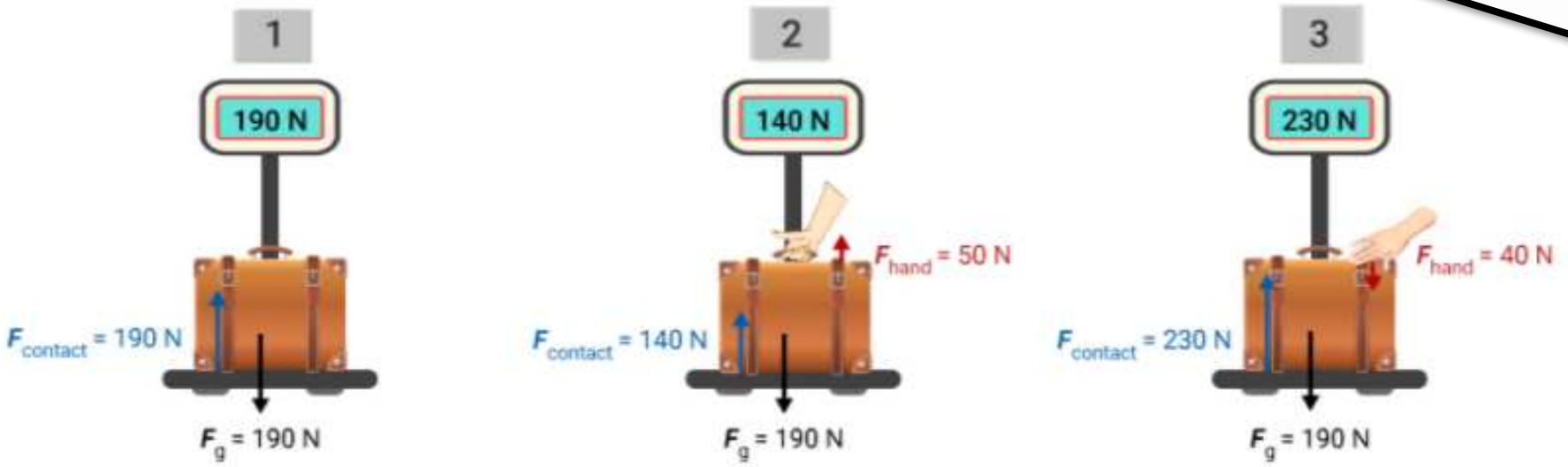


The Normal Force

Figure 19 The normal force is not always equal to the object's weight.

Real and Apparent Weight

Main Concept



Real Weight

The contact force of the scales is equal and opposite to the weight of the suitcase, so the scales read the correct weight of the suitcase.

Low Apparent Weight

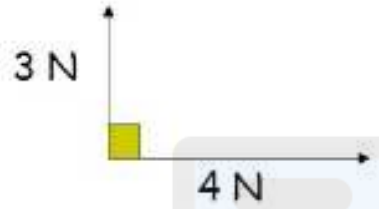
The hand is pulling up on the suitcase, so there is less contact force exerted by the scales on the suitcase. The apparent weight is less than the real weight.

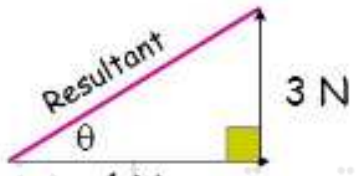
High Apparent Weight

The hand is pushing down on the suitcase, so the contact force from the scales increases. The apparent weight is more than the real weight.

14	Draw a vector and determine its magnitude and direction given its components. Determine the magnitude and direction of the resultant of two vectors in two dimensions using trigonometry, the Pythagorean theorem (case of perpendicular vectors), and the laws of sines and cosines.	As mentioned in question 1 fig 3 + and Example 1	124 123 + 124
	رسم متجه وتحديد مقداره واتجاهه وفقًا لمركباته. ايجاد مقدار واتجاه ناتج متجهين في بعدين باستخدام حساب المثلثات ، نظرية فيثاغورس (حالة المتجهات العمودية) ، وقوانين الجيب وجيب التمام	كما هو مذكور في سؤال 1 الشكل 3 + المثال 1	

Resultant - There is a 90° angle:

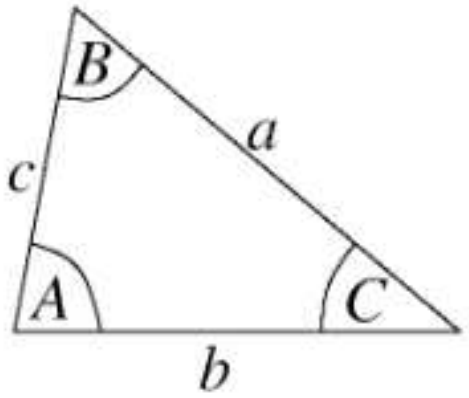




Resultant = $\sqrt{4^2+3^2}$ = 5 N

Angle 0 = $\tan^{-1}(3/4)$ = 36.9°

Resultant - There is NOT a 90° angle:



Sine Rule

$$\frac{a}{\sin(A)} = \frac{b}{\sin(B)} = \frac{c}{\sin(C)}$$

(for finding sides)

Cosine Rule

$$a^2 = b^2 + c^2 - 2bc\cos(A)$$

(for finding sides)

Vectors in Two Dimensions (90°)

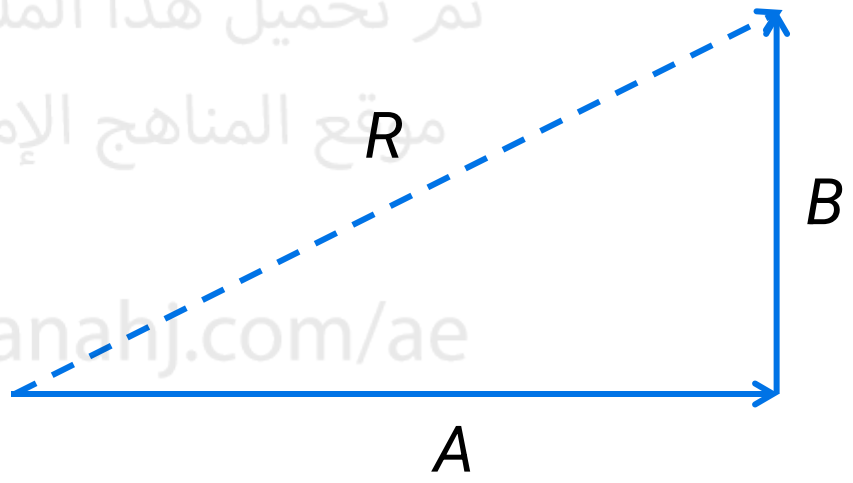
Main Concept

- **Algebraic Method:**

1) If vectors *A* and *B* are perpendicular (90°)

→ use the **Pythagoras** theorem to find the size of the resultant vector.

Pythagoras Theorem



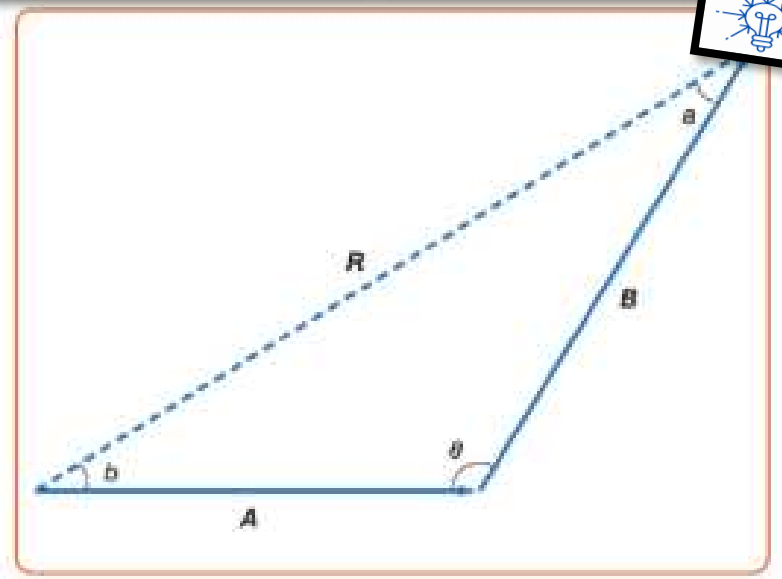
Vectors in Two Dimensions (not in straight line)

Main Concept

- **Algebraic Method:**

2) **If vectors *A* and *B* are NOT perpendicular (NOT 90°)**

→ use the law of sines or the law of cosines.

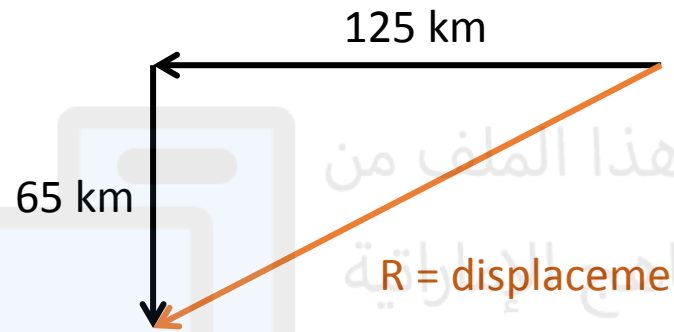


Law of sines → When you know the value of **θ** and also **1 other pair** (side and angle)

Law of cosines → When you know the value of **θ** and also **2 other sides**

14	Draw a vector and determine its magnitude and direction given its components. Determine the magnitude and direction of the resultant of two vectors in two dimensions using trigonometry, the Pythagorean theorem (case of perpendicular vectors), and the laws of sines and cosines.	As mentioned in question 1 fig 3 + and Example 1	124 123 + 124
	رسم متجه وتحديد مقداره واتجاهه وفقًا لمركباته. إيجاد مقدار واتجاه ناتج متجهين في بعدين باستخدام حساب المثلثات ، نظرية فيثاغورس (حالة المتجهات العمودية) ، وقوانين الجيب وجيب التمام	كما هو مذكور في سؤال 1 الشكل 3 + المثال 1	

1. A car is driven 125.0 km due west then 65.0 km due south. What is the magnitude of its displacement? Solve this problem both graphically and mathematically, and check your answers against each other.



Resultant - Is a 90° angle?

$$R^2 = 125^2 + 65^2$$

$$R = \sqrt{125^2 + 65^2}$$

$$= 140.9 \text{ km}$$

Your try…

Concept Check

Example 1 (p 124)

Problem

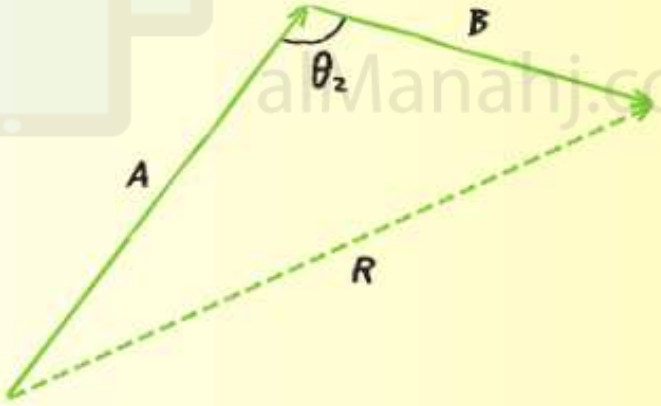
Find the magnitude of the sum of a 15 km displacement and 25 km displacement when the angle θ between them is 90° and when the angle θ between them is 135 °.

Response

1) SKETCH AND ANALYZE THE PROBLEM

- Draw a vector diagram and add the vectors graphically.
- List the knowns and unknowns.

KNOWN		UNKNOWN
$A = 25\ \text{km}$	$\theta = 90°$ or $\theta_2 = 135°$	$R = ?$
$B = 15\ \text{km}$		



2 SOLVE FOR THE UNKNOWN

When the angle θ is 90°, use Pythagoras theorem:

$$R^2 = A^2 + B^2$$

$$R = \sqrt{A^2 + B^2}$$

$$= \sqrt{(25\ \text{km})^2 + (15\ \text{km})^2}$$

$$= 29\ \text{km}$$

When the angle θ is not 90°, use the law of cosines:

$$R^2 = A^2 + B^2 - 2AB(\cos\theta_2)$$

$$R = \sqrt{A^2 + B^2 - 2AB(\cos\theta_2)}$$

$$= \sqrt{(25\ \text{km})^2 + (15\ \text{km})^2 - 2(25\ \text{km})(15\ \text{km})(\cos 135°)}$$

$$= 37\ \text{km}$$

3 EVALUATE THE ANSWER

- **Are the units correct?** Each answer is a length measured in kilometers.
- **Do the signs make sense?** The sums are positive.
- **Are the magnitudes realistic?** From the sketch, you can see the resultant should be longer than either vector.

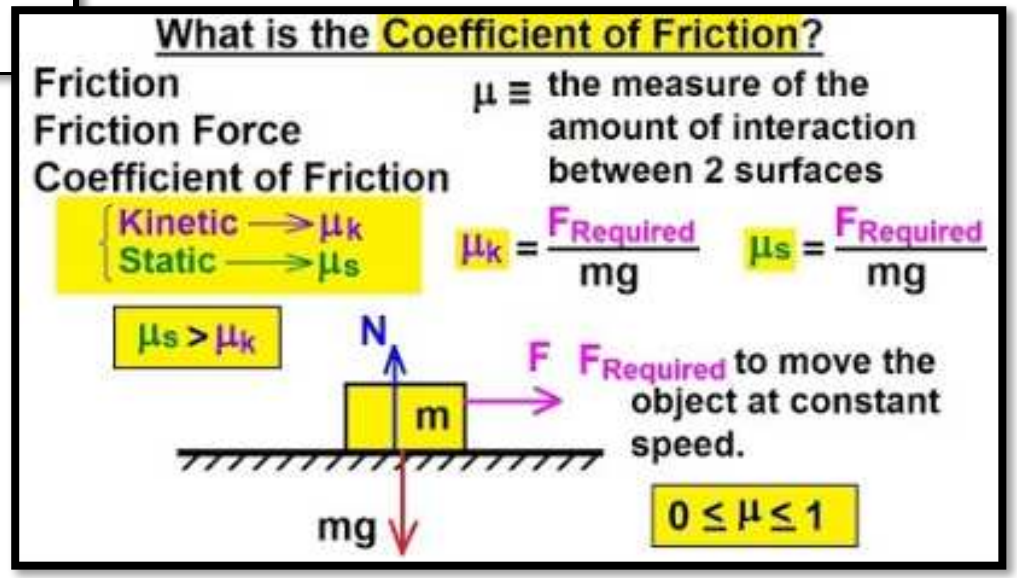
15	Define the coefficients of kinetic and static friction.	As mentioned in the textbook	132
	توضيح مفهوم معاملي الاحتكاك الحركي والسكوني.	كما هو مذكور في كتاب الطالب	

STATIC FRICTION FORCE

The static friction force is less than or equal to the product of the coefficient of static friction and the normal force.

$$F_s \leq \mu_s F_N$$

In the equation for the maximum static friction force, μ_s is the **coefficient of static friction** between the two surfaces. The maximum static friction force that must be overcome before motion can begin is $\mu_s F_N$.



16	Recall that for an object to be in equilibrium, the net force acting on it should be zero.	As mentioned in Figs 14+15	136+137
	يكون الجسم في حالة اتزان ، عندما تكون القوة الكلية المؤثرة فيه صفرًا.	كما هو مذكور في الشكلين 14+15	

Recall that when the net force on an object is zero, the object is in equilibrium. According to Newton's laws, the object will not accelerate because there is no net force acting on it; an object in equilibrium moves with constant velocity. (Remember that staying at rest is a state of constant velocity.)

Figure 14 The ring does not accelerate, so the net force acting on it must be zero.

Compare the vertical component of the force pulling up and to the right to the weight of the mass hanging from the ring.

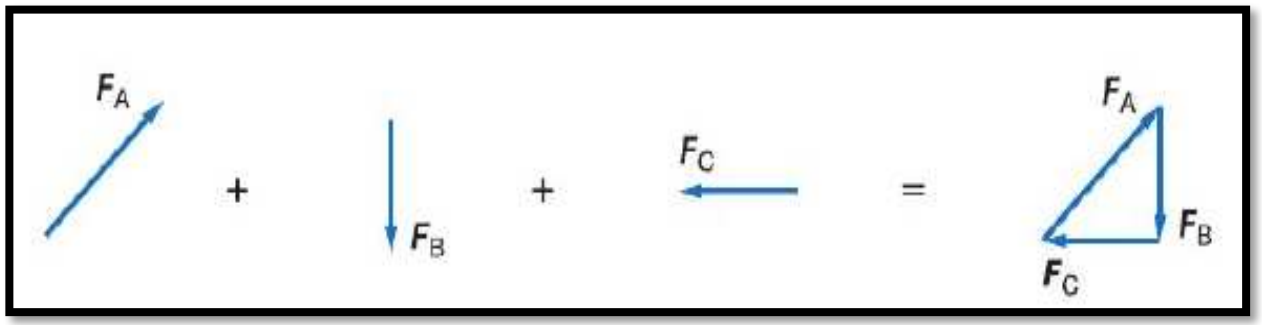


Figure 15 The forces acting on the ring sum to a zero net force.

17	Relate the direction of the acceleration to the direction of the net force	As mentioned in Fig 4	93
	الربط بين اتجاه التسارع واتجاه القوة المحصلة	كما هو مذكور في الشكل 4	

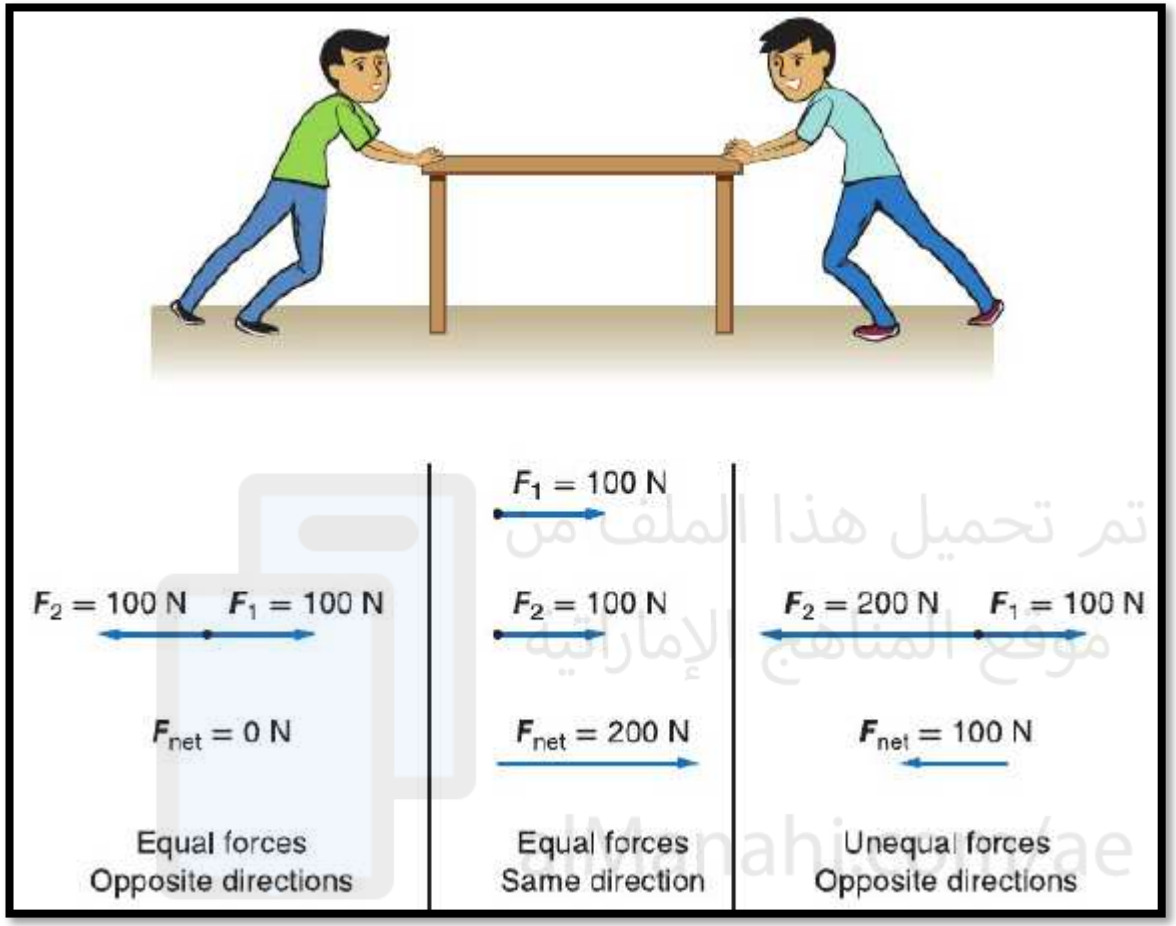


Figure 4 The net force acting on the table is the vector sum of all the forces acting on the table. This case only considers the horizontal forces acting on the table.

Newton's second law states that the acceleration of an object is proportional to the net force and inversely proportional to the mass of the object being accelerated. This law is based on observations of how forces affect masses and is represented by the following equation.

NEWTON'S SECOND LAW

The acceleration of an object is equal to the net force acting on the object divided by the mass of the object.

$$a = \frac{F_{net}}{m}$$

18	Calculate the apparent weight for an object accelerating vertically upward or downward	As mentioned in Example 3	103
	حساب الوزن الظاهري لجسم يتسارع رأسياً لأعلى أو لأسفل	كما هو مذكور في مثال 3	

Example Problem 3

Problem

Your mass is 75.0 kg, and you are standing on a bathroom scale in an elevator. Starting from rest, the elevator accelerates upward at 2 m/s^2 for 2.00 s and then continues at a constant speed. Is the scale reading during acceleration greater than, equal to or less than the scale reading when the elevator is at rest?

Response

SKETCH AND ANALYZE THE PROBLEM

- Draw the situation and a free-body diagram.
- List the knowns and unknowns.

KNOWN

$m = 75.0$ kg

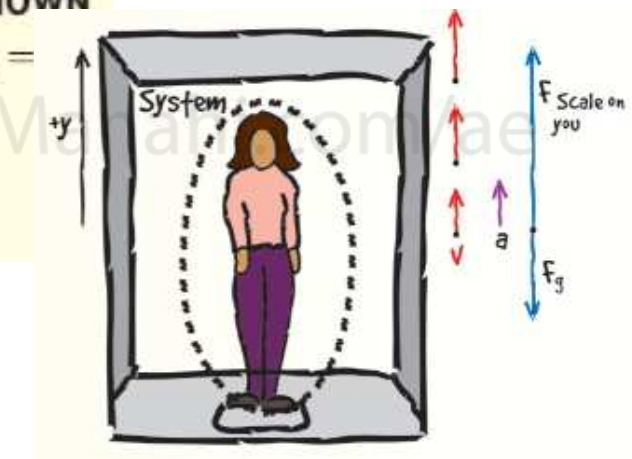
$a = 2.00$ m/s^2

$t = 2.00$ s

$g = 9.8$ N/kg

UNKNOWN

$F_{scale} =$



SOLVE FOR THE UNKNOWN

Elevator at rest:

$$F_{net} = F_{scale} - F_g$$
$$0 = F_{scale} - m.g$$
$$F_{scale} = m.g$$
$$F_{scale} = (75)(9.8)$$
$$= 735 \text{ N}$$

Elevator at rest:

$$F_{net} = F_{scale} - F_g$$
$$\text{m.a} = F_{scale} - m.g$$
$$F_{scale} = m.a + m.g$$
$$F_{scale} = (75)(2) + (75)(9.8)$$
$$= 885 \text{ N}$$

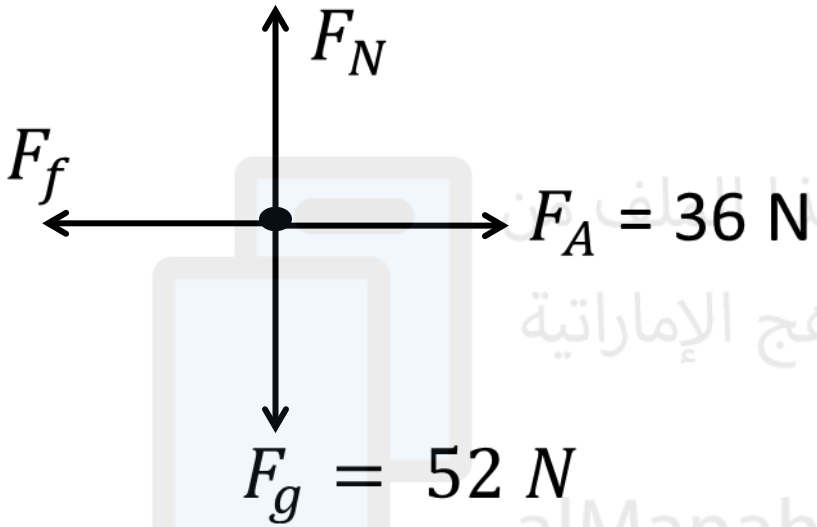
The scale reading when the elevator is accelerating (885 N), is larger than the scale reading when the elevator is at rest (735 N)

EVALUATE THE ANSWER

Are units correct and does sign makes sense?

19	Draw the free body diagram and apply Newton's Second Law for an object movig on a horizontal surface involving friction.	ned in question 18 18 ر في سؤال	133
	رسم مخطط الجسم الحر وتطبيق القانون الثاني لنيوتن لجسم يتحرك على سطح أفقي خشن.	كما هو مذكور في مثال 2	

18. Marwa exerts a 36 N horizontal force as she pulls a 52 N sled across a cement sidewalk at constant speed. What is the coefficient of kinetic friction between the sidewalk and the metal sled runners? Ignore air resistance.



$$F_{net} = 0\ N\ (constant\ speed)$$

$$F_f = F_A \quad (F_{left} = F_{right})$$

$$\mu . F_N = 36$$

$$\mu . (52) = 36 \quad (F_{up} = F_{down}\ or\ F_g = F_N)$$

$$\mu = \frac{36}{51}$$

$$= 0.69$$

20	Solve problems for an object on an inclined plane with and without friction	As mentioned in Example 5	139
	حل مسائل لجسم على مستوى مائل مع الاحتكاك وبدونه	كما هو مذكور في مثال 5	

Use with Example Problem 5.

Problem

Jeff, who weighs 640.0 N, sits on the slope of a hill that descends at an angle of 35.0° from horizontal. What are the components of his weight parallel and perpendicular to the surface of the hill?

Response

SKETCH AND ANALYZE THE PROBLEM

- Choose axes such that +*y* is downward and normal to the slope, and +*x* is down the slope.
- Draw a vector diagram and indicate the components of F_g.
- List the knowns and unknowns.

KNOWN

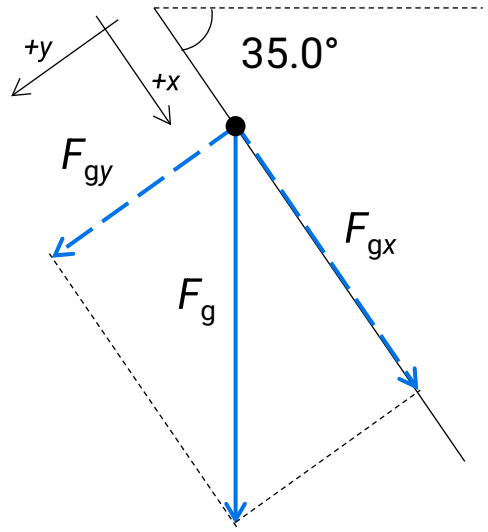
$F_g = 640.0\ \text{N}$

$\theta = 35.0°$

UNKNOWN

$F_{gx} = ?$

$F_{gy} = ?$



SOLVE FOR THE UNKNOWN

- Use trigonometry to find the components of weight.

EVALUATE THE ANSWER

- Force is in newtons, so the units are correct.
- The components of F_g are smaller than F_g itself, as expected.

الأسئلة الإضافية - كيمياء	21	Determine the magnitude and direction of the resultant of two vectors in two dimensions using trigonometry, the Pythagorean theorem (case of perpendicular vectors), and the laws of sines and cosines.	As mentioned in fig 3 and Example 1	123 + 124
		أيجاد مقدار واتجاه ناتج متجهين في بعدين باستخدام حساب المثلثات ، نظرية فيثاغورس (حالة المتجهات العمودية) ، وقوانين الجيب وجيب التمام.	كما هو مذكور في الشكل 3 والمثال 1	

Same as slide 21

الأسئلة الإضافية -	21	Undisclosed	Undisclosed	Undisclosed
		غير معلن	غير معلن	غير معلن

Bonus Questio				
	22	Apply Newton's laws to solve problems involving normal and tension forces including systems of objects connected by strings and Atwood's machine	As mentioned in question 84	117
		تطبيق قوانين نيوتن لحل مسائل على قوى الشد والوزن بما في ذلك أنظمة الأجسام المتصلة ببعضها بمكرات بالخيوط وآلة أتوود	كما ورد في سؤال 84	

Same as slide 11

Bonus Questi				
	22	Undisclosed	Undisclosed	Undisclosed
		غير معلن	غير معلن	غير معلن